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Ground spiders (Gnaphosidae; Araneae) from Crete and adjacent areas of Greece. Taxonomy and distribution. III: *Zelotes* and allied genera

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Ground spiders (Gnaphosidae; Araneae) from Crete and adjacent areas of Greece. Taxonomy and distribution. III: *Zelotes* and allied genera. - The Gnaphosidae zelotine genera *Camillina*, *Drassyllus*, *Trachyzelotes*, *Setaphis* and *Zelotes* from Crete and the adjacent islands of Gavdos, Gavdopoula, Dia, Kos, Karpathos and Antikythira are investigated. Taxonomic details are presented for 20 species. Three species (*Drassyllus pumiloides* sp.n., *Zelotes daidalus* sp.n., and *Z. minous* sp. n.) are new to science. A new combination (*Camillina metellus* [from *Zelotes*]) and two new synonymies (*Trachyzelotes stubbsi* = *T. adriaticus*, *Zelotes bucharensis* = *Z. scrutatus*) are proposed. Two species (*Z. aerosus* and *Z. solstitialis*) are recorded for the first time in Europe, whilst four species are new records for Greece (*Drassyllus praeficus*, *Trachyzelotes adriaticus*, *Setaphis carmeli* and *Z. subterraneus*). Another two species are new records for Crete (*Z. labilis* and *Z. nilicola*).

Key-words: Araneae - Gnaphosidae - *Zelotes* - Greece - Crete - South Aegean - taxonomy - distribution.

INTRODUCTION

Zelotes Gistel, 1848 is a highly speciose genus with worldwide distribution, included in the zelotine group of the Gnaphosidae. These genera possess a characteristic preening comb on metatarsi III and IV. The status of the genus *Zelotes* is problematic due to the vague limits of the taxonomical characters defining it, and to the great variety of genital characters among its species (Platnick & Shadab, 1983). Since there is no contemporary, comparative revision of *Zelotes* in the Old World, the study of this genus is very difficult, especially in the Mediterranean, where its diversity becomes very high.

Up to now, 357 *Zelotes* species have been identified in the whole world, of which, about 200 occur in the Old World (see Platnick, 2001). On a regional level,

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species catalogues for Central Europe list 30 zelotine species (Grimm, 1985), for Czechoslovakia 19 (Buchar, 1992), for Romania 24 (Weiss & Petrisor, 1999), for Bulgaria 35 (Deltshev & Blagoev, 2001), and for Italy 57 (Pesarini, 1994). The recent revision by Levy (1998) revealed 36 species in Israel, making this group the most species-rich among gnaphosids and '...probably the largest of all indigenous spider genera'. These data are indicative of the high diversity of the genus in the Mediterranean region. It has also been observed in American *Zelotes*, that their species numbers are very high in California.

In Greece, as most records have been based on occasional hand collections, the number of species of these fast moving ground spiders has been greatly underestimated. Hadjissarantos (1940) recorded 10 zelotines out of 32 gnaphosids from Attiki. Research into the literature on Crete reveals 11 zelotines out of 34 Gnaphosidae.

In this study we present the results of an extensive survey along the island of Crete and the adjacent islands Gavdos, Gavdopoula and Dia, as well as additional material from the Aegean islands Kos, Karpathos and Antikythira and from mainland Peloponnisos. At all localities, pitfall traps have been used. This is the most suitable method for collecting these spiders, which are mostly nocturnal and very active on the ground (Levy, 1998). In total, 20 species have been identified. These belong to the genera *Camillina* [1 sp.], *Drassyllus* [2 spp.], *Trachyzelotes* [4 spp.], *Setaphis* [1 sp.] and *Zelotes* [12 spp.]. These data correspond to 9 of the previously recorded species (excluding *Z. clivicolus* and *Z. oblongus*, which probably are misidentifications of allied species). Consequently our results double the number of zelotines recorded for Crete. There are a few more species in our collection, which have not yet been satisfactorily identified, so we expect the actual number of zelotine species to be higher.

MATERIAL AND METHODS

Sampling strategy, exact localities and habitat type of each site are given in Chatzaki *et al.* (2002a). In total, 59 sites were selected along the length of the island of Crete, 11 on the island group Gavdos – Gavdopoula and 3 on the island Dia (Fig. 1). Sampling sites cover Crete from north to south, west to east and along the altitudinal gradients of the three mountain massifs of the island, namely, Lefka Ori Mts., Psiloreitis Mt. and Lasithiotika Ori Mts. Most of the habitats selected on Crete are phrygana (plant communities which include dwarf, aromatic, thorny shrubs) and maquis. Few of the sites are pine forests or are situated close to permanent or temporary water reservoirs. Some records of material collected from other areas of mainland Greece and the Aegean islands (Fig. 2) have been added, but are not shown in the distribution maps given for the species.

Spiders were collected using pitfall traps (12 cm height, 9.5 cm in diameter). The killing preservative was ethylene glycole. At each site, 15-20 traps were set and changed in two-months intervals. In most cases only material from the period of high activity of Gnaphosidae, e.g., late spring to early autumn (Chatzaki *et al.*, 1998; Chatzaki, 1998), has been analyzed and is presented here.

The collection of material was financially supported by scientific projects of the EEC concerning biodiversity, i.e. TERRA, INTEREG II (ARCHIMED), or by the

FIG. 1
Map of sampling sites on Crete and the surrounding islands Gavdos, Gavdopoula and Dia.

FIG. 2
Map of sampling sites on Attiki, Peloponnisos and Aegean islands.

Ministry of Environment, Physical Planning and Public Works (Project: "Gavdos, an island on the edge of Crete"), undertaken by the Natural History Museum of Crete (NHMC) and by the Biological Department of the University of Crete.

Identifications were carried out at the Natural History Museum of Crete (NHMC) and at the Zoological Institute of Innsbruck, Austria. Most of the material presented here is used for the Ph.D. thesis of the first author and, if not stated otherwise, it is deposited at the NHMC. Material from the collection of Dr Hadjissarantos,

deposited at the Zoological Museum of the Biological Department of Athens (ZMUA), and material from the collection of Roewer, deposited at the Senckenberg Museum of Natural History, Frankfurt am Main (SMF), as well as from the collection of the second author (CTh) and of Dr J. Levy (Hebrew University, Jerusalem, HUJ), has also been examined. Voucher specimens have been deposited at the Natural History Museum of Geneva (MHNG).

The following abbreviations are used in the text: TL: total length, PL: prosoma length, PW: prosoma width, OL: opisthosoma length, Cy: cymbium, Ta: tarsus, Me: metatarsus, Ti: tibia, Pa: patella, Fe: femur, d: dorsal, v: ventral, AME: anterior median eyes, ALE: anterior lateral eyes, PME: posterior median eyes, PLE: posterior lateral eyes. All measurements are given in mm. All drawings presented here are by the first author.

RESULTS

Camillina metellus (Roewer, 1928) comb. n. Figs 3-9, 115

Zelotes metellus Roewer, 1928 (p. 110, Fig. 15), CRETE: Rethymno, Aptera (type locality).

Etymology. As Roewer named this species after the Roman conqueror 'Metellus Creticus', the specific name is a noun in apposition, therefore invariable.

Material. C. metellus : CRETE: Georgioupoli, Phragmites stand at spring rivulet close to sandy seashore, E of the village (1 ♀, 19/5/2001, NHMC leg. & don. Kronestedt).

C. metellus (?): CRETE: CHANIA: Site 1 (a 6 ♂♂; b 3 ♂♂ 1 ♀); Site 2 (a 8 ♂♂ 3 ♀♀; b 6 ♂♂ 1 ♀); Site 4 (b 1 ♂) (leg. Lymberakis); Site 23 (c 2 ♀♀) (leg. Paragamian); RETHYMNO: Site 27 (a 16 ♂♂ 1 ♀) (leg. Chatzaki); Site 28 (a 1 ♂; b 1 ♂ 1 ♀); Site 29 (a 2 ♂♂); Site 39 (a 1 ♂); Site 41 (a 2 ♀♀; b 4 ♂♂ 1 ♀) (leg. Nikolakakis); IRAKLEIO: Site 46 (a 2 ♀♀; b 1 ♀) (leg. Papadimitrakis); Site 52 (b 4 ♂♂); Site 53 (b 1 ♂ (leg. Nikolakakis); LASITHI: Site 55 (a 1 ♂; b 2 ♂♂[CTh]); Site 73 (a 2 ♂♂) (leg. Chatzaki); Site 68 (a 1 ♂) (leg. Papadimitrakis); Site 63 (b 5 ♂♂; b 1 ♂ 1 ♀ [MHNG]) (leg. Stathi).

C. metellus (?): KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (1 ♂, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

Comparative material examined: *Zelotes metellus*: CRETE: 1 ♀ holotype, SMF: CR 612/62.

Taxonomy. Zelotes metellus was described by Roewer (1928) on the basis of a single female collected on Crete. Examination of the type verified the identification of a specimen, collected by Dr. Kronestedt in Georgioupoli (Fig. 8-9). In our collection there are females which are very similar to the type, but not identical (see Fig. 6-7). These females are matched with male specimens (Figs 3-5), both of them bearing the diagnostic characters of the genus *Camillina*: embolar base (EB) recessed, situated medially, terminal apophysis (TA) bifid, epigyne with median plate (MP) (sensu Platnick & Shadab, 1982a). On the basis of these characters we conclude that this species belongs to *Camillina*. Considering the similarity of the females of this species with the 'true' *Z. metellus*, we presume that the latter also belongs to the same genus, therefore the transfer is proposed. In the absence of male specimens, matching the

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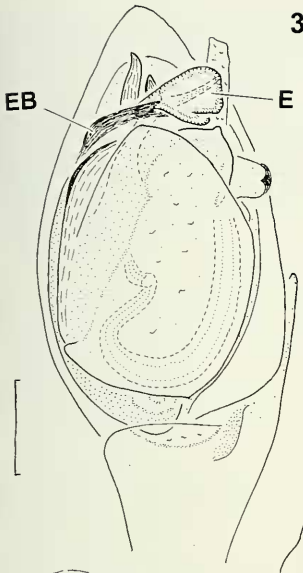
Figs 3-9

Camillina metellus (8-9), *C. metellus* (?) (3-5, 6-7). Palp of ♂, ventral view (3), dorsal view (4), retrolateral view (5), epigyne (6, 8), vulva (7, 9). EB: embolar base, E: embolus, l: lamella, TA: terminal apophysis, MP: median plate. Scale lines 0.1mm.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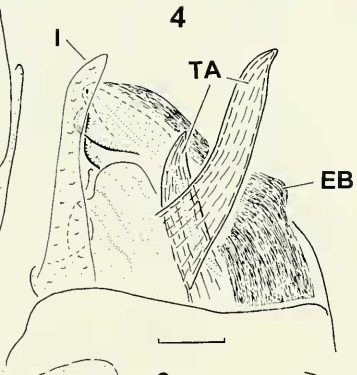
EB
E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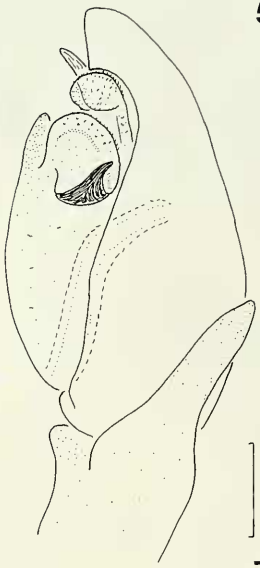
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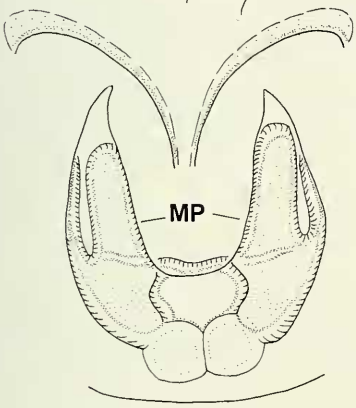
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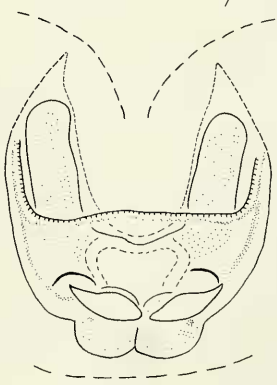
MP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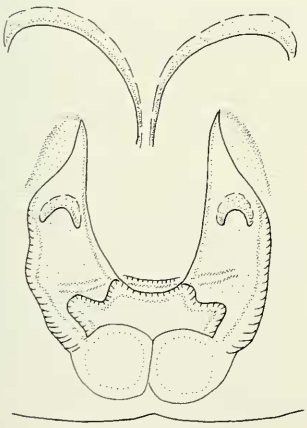
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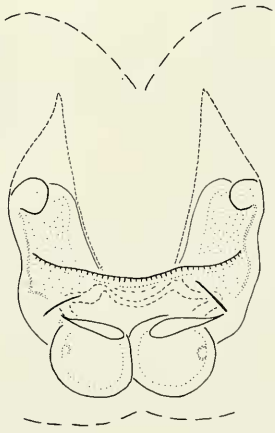
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single 'true' *C. metellus* female, we dare not suggest that a second *Camillina* occurs on Crete. Therefore we reluctantly place all these specimens in one species, *C. metellus*.

Camillina was established by Tullgren (1910, sub *Camilla*) for a species from Tanzania. There are about 20 species known from the Old World (see Platnick & Murphy, 1987), mainly from Africa, and another 40 species from the New World (see Platnick & Shadab, 1982a). *C. europaea* Dalmas, 1922 is the only species of the genus recorded in Europe (southern Italy, Di Franco, 1997). This is the first record of the genus in Greece.

Measurements ♂ (♀), n = 8 (7): TL: 2.9-4.5 (3.5-4.5), PL: 1.4-1.9 (1.5-1.7), PW: 1.1-1.6 (1.1-1.5), OL: 1.5-2.4 (1.5-2.4), PL/PW: 1.14-1.41 (1.13-1.45).

♂♀: Small spiders with colour varying from yellow to light brown or grey. Ta and Me of contrasting light colour. Habitus as in *Zelotes*. AME very close to each other and to ALE, forming a continous row, straight or slightly recurved. PME oval, closer to PLE than to each other, all set in a straight or slightly procurved line. Opisthosoma oval, anterior spinnerets cylindrical and well separated.

Legs: Ta and Me I-II with scopula hairs. Ta III-IV with stripes of dense, fine spines. Preening combs present on Me III and IV. Spination: Fe: I-II d 2-3 ; III-IV d 6-7. Pa: I-II, IV - ; III r 1. Ti: I-II - ; III-IV spinose. Me: I-II - ; III-IV spinose.

♂ Pedipalp (Figs 3-5): Tibial apophysis long and tapering. Sperm duct following the tegulum from retro- to prolateral side, then turning inwards. Embolus (E) strongly developed, rising from the prolateral, dorsal part of the tegulum, transverse, distally broadened, its surface rough. Terminal apophysis (TA) bifid, with tips crossed (Fig. 4). A membranous lamella (l), originating from the dorsal part of the tegulum, also present. Retinaculum large, with anterior edge pointed.

♀ Epigyne (Fig. 6): Anterior margin divided, posteriorly prolonged. Median plate (MP) oval, longer than wide. Introductory orifices situated laterally and near the posterior rim of the median plate.

Vulva (Fig. 7): Introductory ducts short and sclerotized. Glandular heads situated anteriorly, often with a sclerotized ventral rim. Spermathecae globular and laterally connected to the introductory ducts. Fertilisation ducts situated at the anterior border of spermathecae.

Ecology. C. metellus has been mainly collected on phrygana near the Cretan coasts and inland, only on the southwestern slopes of Mt. Psiloreitis. The species reaches altitudes of about 1400m (Fig. 115).

Distribution. Crete, Karpathos (Greek endemic?).

Drassyllus praeficus (L. Koch, 1866) Figs 17-19, 116

Identification: Grimm (1985, p. 267, Figs 317, 319-320).

Material. CRETE: CHANIA: Site 4 (a 3 ♂♂); Site 5 (a 3 ♂♂ 3 ♀♀; b 1 ♀) (all leg. Lymberakis); Site 11 (b 2 ♂♂) (leg. Stathi); RETHYMNO: Site 24 (a 1 ♀) (leg. Stathi); Site 28 (a 7 ♀♀); Site 29 (a 2 ♂♂ 6 ♀♀); Site 29 (b 1 ♀); Site 32 (a 22 ♂♂ 49 ♀♀); Site 39 (a 5 ♂♂ 7 ♀♀); Site 40 (a 11 ♂♂; b 14 ♀♀) Site 41 (a 1 ♀) (all leg. Nikolakakis); Site 30 (a 1 ♀); Site 31 (a 1 ♀) (all leg. Trichas); Site 34 (a 10 ♂♂ 24 ♀♀; b 1 ♀; e 27 ♂♂ 3 ♀♀) (all leg. Chatzaki); IRAKLEIO: Site 42 (e 5 ♂♂ 1 ♀) (leg. Chatzaki); Site 43 (a 51 ♂♂ 84 ♀♀; b 18 ♀♀); Site 44 (a 9 ♂♂ 6 ♀♀); Site 47 (a 24 ♂♂ 11 ♀♀; b 10 ♀♀; e 6 ♂♂ 2 ♀♀) (all leg. Nikolakakis); Site 46 (a 1 ♀); Site 49 (a 9 ♂♂ 23 ♀♀; b 2 ♀♀): Site 51 (a 24 ♀♀) (all leg.

Papadimitrakis); Site 48 (a 3 ♂♂ 3 ♀♀) (leg. Trichas); LASITHI: Site 55 (b 1 ♀; e 2 ♂♂); Site 56 (a 8 ♂♂ 9 ♀♀; b 2 ♀♀; d 11 ♂♂) (all leg. Chatzaki); Site 58 (a 1 ♂ 22 ♀♀); Site 62 (a 1 ♀) (all leg. Papadimitrakis); Site 59 (c 1 ♂ 2 ♀♀ [MHNG]); Site 70 (a 1 ♂) (all leg. Trichas).

Ecology. D. praeficus is common on Crete, occurring from the coastal plains of the island up to 1650m. However, it is less common in the district of Chania and absent from the Lefka Ori Mts., whereas it is abundant on the other two mountains of Crete (Fig. 116). The peak of activity in both males and females is from spring to autumn.

Distribution. Europe to Central Asia (first record for Greece).

Drassyllus pumiloides Chatzaki sp. n. Figs 10, 12, 14-15, 116

Etymology: The name of this species indicates its close relationship to *D. pumilus* (C. L. Koch, 1839).

Material. Type material: Site 63a (Istro) (1 ♂ holotype [NHMC]; Site 58a (2 ♀♀ paratypes [NHMC]; 1 ♀ paratype [MHNG]).

CRETE: CHANIA: Site 1 (a 1 ♂); Site 2 (a 3 ♀♀); Site 6 (d 1 ♂); Site 7 (c 1 ♂) (all leg. Lymberakis); RETHYMNO: Site 28 (b 1 ♀); Site 29 (a 2 ♂♂ 2 ♀♀); Site 39 (a 1 ♀; b 1 ♂ [MHNG]); Site 40 (b 3 ♂♂ 2 ♀♀) (all leg. Nikolakakis); Site 34 (a 1 ♂ 1 ♀) (leg. Chatzaki); IRAKLEIO: Site 43 (a 3 ♂♂ 1 ♀; b 1 ♀); Site 45 (a 1 ♂); Site 47 (e 1 ♂ 1 ♀); Site 50 (b 1 ♀) (all leg. Nikolakakis); Site 49 (a 3 ♂♂; a 1 ♀ [CTh]; b 1 ♀) (all leg. Papadimitrakis); LASITHI: Site 55 (a 1 ♂) (leg. Chatzaki); Site 63 (a 1 ♂) (leg. Stathi); Site 58 (a 3 ♀♀) (leg. Papadimitrakis).

Comparative material examined: *D. pumilus* (C. L. Koch, 1839): Austria, N. Tirol, Ötztal (1 ♂, 5/5/1962, CTh); Italy, Trentino, V. Ledro, Bezzecca (1 ♀, 27/5/1963, CTh).

D. jubatopalpis Levy, 1998: Israel, Golan, Odem forest, 950m (1♂ 5/1997, leg. Sharon, HUJ 15222). Israel, same locality (1 ♀, 5/1996, leg. Sharon, Col. Levy, 15223).

Taxonomy. Measurements ♂ (♀), n = 6 (6): TL: 2.6-3.2 (2.6-3.4), CL: 1-1.2 (1.1-1.3), PW: 1.4-1.8 (0.8-0.9), OL: 1.4-1.8 (0.8-0.9), PL/PW: 1.2-1.37 (1.2-1.62).

♂♀: Small spiders of light to dark brown colour. Prosoma longer than wide. Eyes round, except for oval PME. AME closer to ALE than to each other. Posterior row of eyes recurved, anterior row procurved or straight.

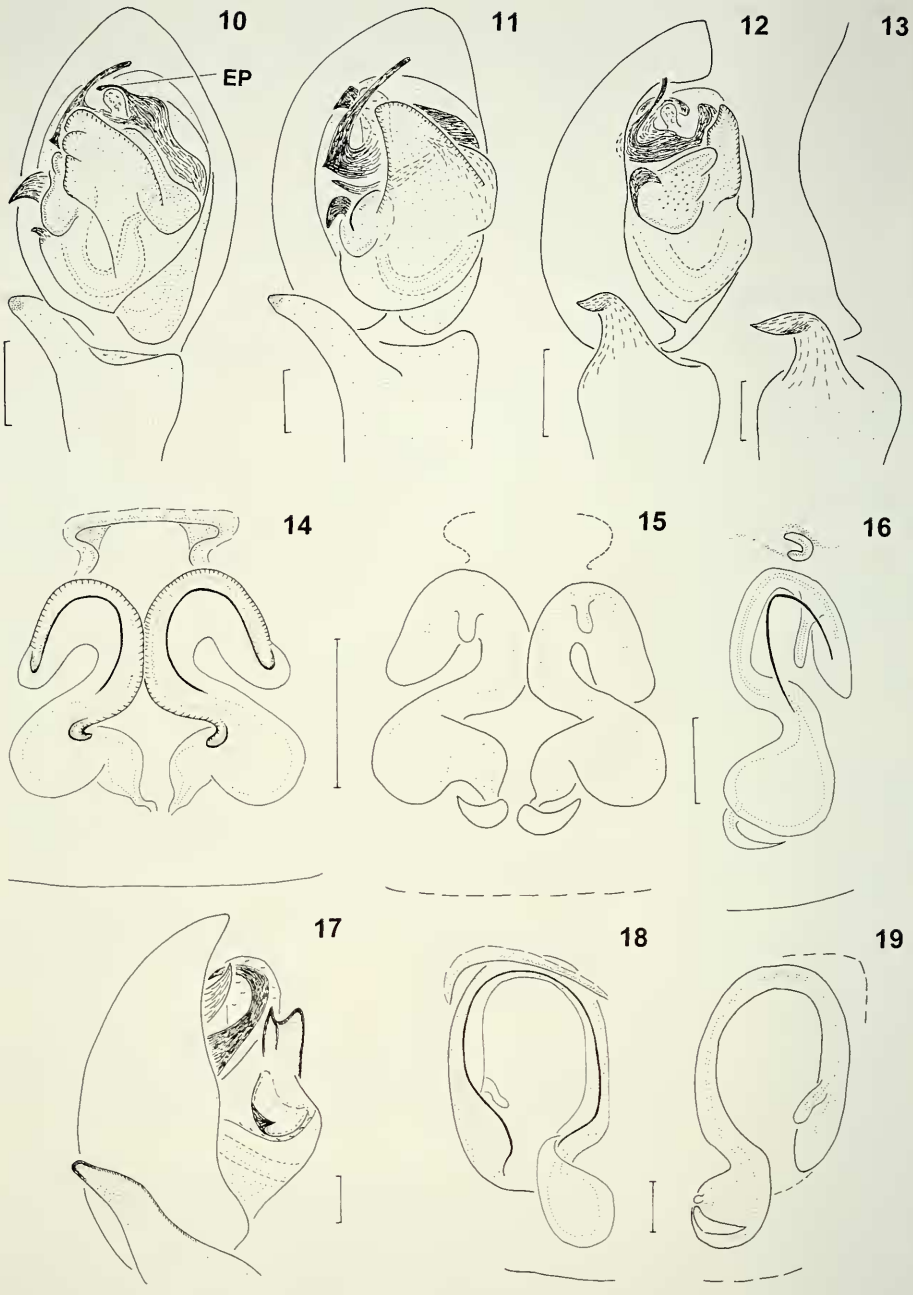
Legs: Co, Tr, Me and Ta yellow, the rest brown. Ta and Me I-II with stripes of scopula hairs, Ta and Me III-IV with dense spiny hairs. Me III-IV with apical preening comb. Spination: Fe: I-IV d 1-2. Pa: I-IV - . Ti: I-II - ; III-IV spinose. Me: I-II - ; III d 4; IV v 2 p 1.

♂ Pedipalp (Figs 10, 12): Tibial apophysis pointed, sharply bent dorsally. Embolus filiform, retrolateral embolar projection (EP) small. Terminal apophysis (TA) (sensu Platnick & Shadab, 1982b) prominent, rounded, almost covering the base of the embolus. Retinaculum retrolateral and very broad, with a very small projection proximal to it.

Epigyne (Fig. 14): Anterior margin continuous and almost touching the introductory ducts. Lateral margins forming loops alongside the introductory ducts.

Vulva (Fig. 15): Introductory ducts broad, curved, with small glandular heads on the anterior arch. Spermathecae two-lobed, with a large, globular chamber, and a smaller median chamber leading to the fertilisation ducts.

Comments. This species is very close to *D. pumilus* (C. L. Koch, 1839), as can be seen from Figs 11, 13 and 16 (see also Grimm 1985, p. 271, Figs 313, 323-324). Apart from different size, *D. pumilus* being much larger (♂ ♀ 3.5-4.8mm, according to



FIGS 10-19

Drassyllus pumiloides sp. n. (10, 12, 14-15), *Drassyllus pumilus* (11, 13, 16), *Drassyllus praeficus* (17-19). Palp of ♂, ventral view (10-11), retrolateral view (12-13, 17), epigyne (14, 16, 18), vulva (15, 19). EP: embolar projection. Scale lines 0.1mm.

Grimm), the new species also differs in the following characters: terminal apophysis less prominent; embolus longer; embolar projection broader; anterior margin of epigyne much closer to the introductory ducts; lateral margins almost parallel and straight, then turning sharply; introductory ducts more slender, with longer glandular heads; spermathecae pear-like. *D. villicoides* (Giltay, 1932) from Peloponnisos clearly differs in size (TL 7.5mm, according to Giltay, 1932). Females of *D. jubatopalpis* Levy, 1998 are also very similar, but different (in our specimens introductory ducts and median plate shorter, no ducts in the spermathecae, see Levy, 1998, p. 154, Figs 136-137), the males easily distinguishable by the shape of the tibial apophysis and by details of the palpal organ.

Ecology. D. pumiloides occurs almost all over Crete, being absent only from the easternmost areas, apparently avoiding the driest habitats (Fig. 116). It reaches altitudes up to 1650m.

Distribution. Crete (endemic?).

Trachyzelotes barbatus (L. Koch, 1866) Figs 20-21, 26-27, 117

Identification: Platnick & Murphy (1984, p.15 Figs 27-30).

Material. CRETE: CHANIA: Site 1 (a 15 ♂♂ 6 ♀♀; b 3 ♂♂ 3 ♀♀; c 1 ♀); Site 2 (a 29 ♂♂ 11 ♀♀; b 3 ♂♂ 4 ♀♀); Site 4 (a 6 ♂♂ 1 ♀; b 1 ♂ 5 ♀♀); Site 6 (d 1 ♀; e 2 ♂♂; f 1 ♀) (all leg. Lymberakis); RETHYMNO: Site 26 (a 1 ♀) (leg. Lymberakis).

ANTIKYTHIRA: Potamos, 700m W: sparse phrygana on sandy soil close to the village, (7 ♂♂ 4 ♀♀, pitfall traps 27/3/2001 – 5/8/2001, leg. Chatzaki).

Ecology. T. barbatus is not very common on Crete (Fig. 117). It has been found on sites at the western periphery of Crete and on Antikythira, always in phrygana.

Distribution. Mediterranean to Central Asia, USA. In our study area this species has been recorded only from western Crete and from Antikythira, suggesting an immigration from the Balkan peninsula.

Trachyzelotes malkini Platnick, 1984 Figs 22-23, 28, 117

Identification: Platnick & Murphy (1984, p. 22, Figs 51-54).

Material. CRETE: CHANIA: Site 5 (a 7 ♂♂ 4 ♀♀); Site 6 (h 1 ♂; i 1 ♂) (all leg. Lymberakis); Site 13 (c 12 ♂♂ 3 ♀♀; d 3 ♂♂ 3 ♀♀ [MHNG]); Site 14 (c 3 ♂♂ 1 ♀; d 1 ♀); Site 15 (c 3 ♂♂; d 2 ♀♀); Site 16 (c 2 ♂♂); Site 20 (a 1 ♂); Site 21 (d 1 ♀) (all leg. Paragamian); RETHYMNO: Site 24 (a 1 ♂ 1 ♀) (leg. Stathi); Site 25 (a 2 ♂♂); Site 26 (a 4 ♂♂ 3 ♀♀; b 2 ♀♀) (all leg. Lymberakis); Site 27 (a 4 ♂♂ 2 ♀♀; f 5 ♂♂); Site 55 (b 2 ♂♂) (all leg. Chatzaki); Site 28 (a 4 ♂♂ 3 ♀♀; b 1 ♂); Site 29 (a 4 ♂♂ 1 ♀); Site 39 (a 8 ♂♂ 1 ♀; b 1 ♀); Site 40 (a 1 ♂ 1 ♀; b 27 ♂♂ 9 ♀♀; c 1 ♀); Site 41 (a 5 ♂♂ 2 ♀♀) (all leg. Nikolakakis); IRAKLEIO: Site 42 (e 1 ♂) (leg. Chatzaki); Site 43 (a 1 ♂ 1 ♀; b 1 ♀); Site 44 (a 3 ♂♂ 2 ♀♀; b 1 ♀); Site 45 (a 3 ♂♂ 3 ♀♀; b 2 ♀♀); Site 47 (a 1 ♂; b 2 ♂♂ 5 ♀♀; e 1 ♂); Site 50 (b 7 ♂♂ 1 ♀; c 1 ♀) (all leg. Nikolakakis); Site 46 (a 3 ♂♂ 7 ♀♀; b 2 ♂♂ 1 ♀); Site 49 (a 22 ♂♂ 7 ♀♀; b 8 ♀♀); Site 51 (a 2 ♀♀) (all leg. Papadimitrakis); LASITHI: Site 55 (a 6 ♂♂); Site 56 (a 3 ♂♂ 2 ♀♀; b 2 ♂♂ 1 ♀); Site 73 (e 4 ♂♂) (all leg. Chatzaki); Site 58 (a 8 ♂♂ 1 ♀); Site 64 (d 2 ♂♂ 1 ♀); Site 65 (a 2 ♂♂ 3 ♀♀) (all leg. Papadimitrakis); Site 63 (a 26 ♂♂ 2 ♀♀; b 6 ♀♀); Site 71 (a 2 ♂♂) (all leg. Stathi); Site 59 (a 4 ♀♀; c 10 ♂♂); Site 61 (b 1 ♂) (all leg. Trichas).

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (1 ♂ 2 ♀♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

Ecology. This is the commonest *Trachyzelotes* species on Crete. It is widespread on the whole island, as well as on Gavdos and on Karpathos. It occurs in

phrygana, from the periphery of Crete into the mainland and up to 1450m. The peak of activity of males is in late spring to early summer and that of females in spring and summer.

Distribution. Russia, Turkey, GREECE: Crete: Chania: Kalathas, Akrotiri; Lasithi: Agios Nikolaos; Mallia (Platnick & Murphy, 1984: 23).

Trachyzelotes lyonneti (Audouin, 1826) Figs 24-25, 29, 117

Identification: Platnick & Murphy (1984, p. 6, Figs 7-10), Levy (1998, p. 105, Figs 19-22).

Material. CRETE: CHANIA: Site 1 (a 1 ♂); Site 4 (a 1 ♂; b 1 ♂) (all leg. Lymberakis); RETHYMNO: Site 27 (a 1 ♂) (leg. Chatzaki); Site 41 (a 1 ♀) (leg. Nikolakakis); IRAKLEIO: Site 47 (a 1 ♂; b 5 ♂♂ 3 ♀♀; e 2 ♀♀); Site 50 (b 23 ♂♂ 10 ♀♀) (leg. Nikolakakis); Site 50 (c 1 ♂ 4 ♀♀) (leg. Papadimitrakis); Site 48 (a 11 ♂♂ 4 ♀♀) (leg. Trichas); LASITHI: Site 55 (a 1 ♂) (leg. Chatzaki); Site 60 (a 2 ♂♂ 1 ♀) (leg. Stathi); Site 64 (c 3 ♂♂) (leg. Nikolakakis); Site 64 (d 12 ♂♂ 10 ♀♀; e 1 ♂) (all leg. Papadimitrakis); Site 61 (b 1 ♂); Site 66 (a 2 ♂♂) (all leg. Trichas).

Ecology. This species occurs in phrygana of the lowlands of Crete, below 600m (Fig. 117). It is absent from western Crete, which might be due to interaction with *T. adriaticus*, as will be pointed out later. Adults are found from spring to autumn.

Distribution. Mediterranean to Central Asia, USA, Brazil, Peru, GREECE: Crete: Irakleio, Gortyna (Platnick & Murphy, 1984: 23). *T. lyonneti* has a Mediterranean centre of distribution and was imported to USA, as commented by Platnick & Murphy (1984).

Trachyzelotes adriaticus (Caporiacco, 1953) Figs 30-31, 32-39, 117

T. stubbsi Platnick & Murphy, 1984 (p. 9, Figs 15-16), Cyprus, Cape Kiti, near Larnaka airport (type locality). **Syn. n.**

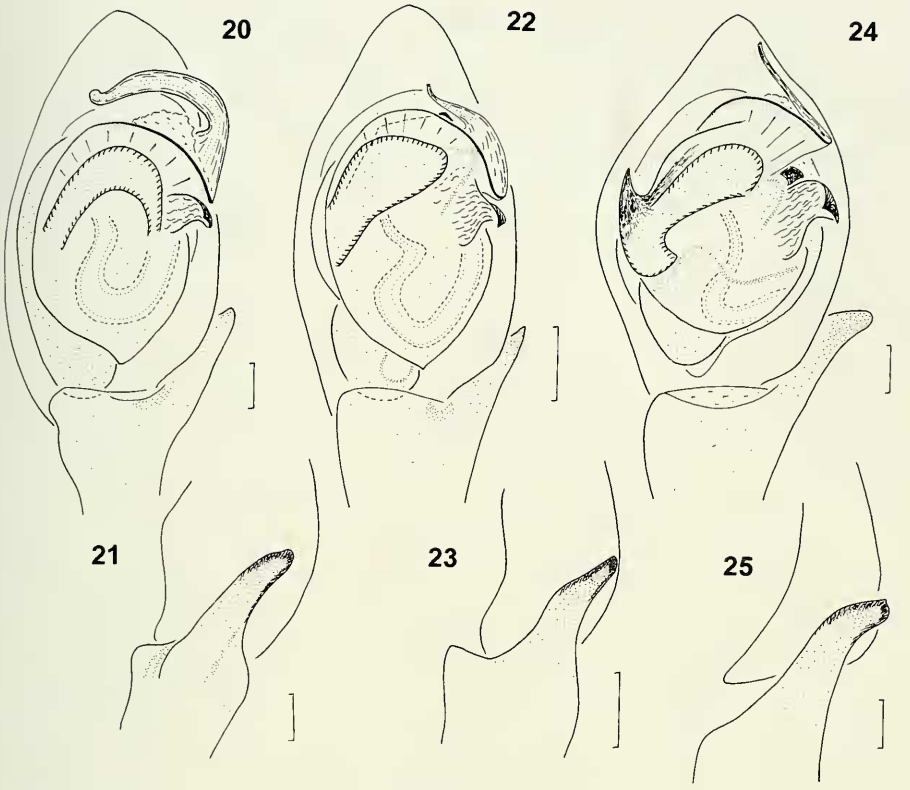
T. stubbsi: Levy (1998, p. 106, Figs 23-24), Israel.

Identification: Platnick & Murphy (1984, p. 9, Figs 11-14), Levy (1998, sub *T. stubbsi*).

Material. CRETE: CHANIA: Site 1 (a 1 ♂); Site 2 (a 15 ♂♂ 5 ♀♀); Site 5 (a 2 ♂♂) (all leg. Lymberakis); Site 21 (b 1 ♀); Site 23 (a 2 ♀♀; c 8 ♂♂ 3 ♀♀) (all leg. Paragamian); RETHYMNO: Site 34 (a 3 ♀♀) (leg. Chatzaki); Site 25 (a 10 ♂♂ 1 ♀) (all leg. Lymberakis); Site 32 (a 2 ♂♂ 1 ♀) (leg. Nikolakakis).

ANTIKYTHIRA: Potamos, 700m W: sparse phrygana on sandy soil close to the village, (10 ♂♂ 3 ♀♀, pitfall traps 27/3/2001 – 5/8/2001, leg. Chatzaki).

Taxonomy. Males of this species have been collected from three islands: Crete, Gavdopoula and Antikythira. On all three islands, male specimens differ in size and in the prolateral extension of the terminal apophysis (sensu Platnick & Murphy, 1984). In males from Gavdopoula, which are the smallest, the tibial apophysis of some specimens is not bifid and is relatively more straight, whilst the extension of the terminal apophysis is rather small and has an extra angle below (Figs 34-35). Males from Antikythira are the largest. The tibial apophysis is almost the same as that of *T. adriaticus* from Crete, but the extension of the terminal apophysis has a characteristic hammer-like shape (Figs 36-37). Interestingly, these features fit the description of *T. stubbsi* Platnick & Murphy (1984, p. 9, Figs 15-16), known from a single male caught on Cyprus, and from a later record from Israel (Levy, 1998, p. 106, Figs 23-24). The female of *T. stubbsi* was unknown. All the female *Trachyzelotes* caught in the same



FIGS 20-25

Trachyzelotes barbatus (20-21), *T. malkini* (22-23), *T. lyonneti* (24-25). Palp of ♂, ventral view (20, 22, 24), retrolateral view (21, 23, 25). Scale lines 0.1mm.

traps along with "*T. stubbsi*" males, are indistinguishable from those of *T. adriaticus* (see Figs 30-31). We suggest that the differences mentioned above are due to intraspecific variability, and therefore we place *T. stubbsi* in the synonymy of *T. adriaticus*.

Ecology. *T. adriaticus* has been found on few sites of western Crete and on Gavdos, where it occurs along with *T. malkini*. Apparently the distributions of *T. adriaticus* and *T. lyonneti* do not overlap on Crete (Fig. 117). We presume that there must be some kind of competition between these two species, especially when taking into consideration the dispersal capacities of these spiders.

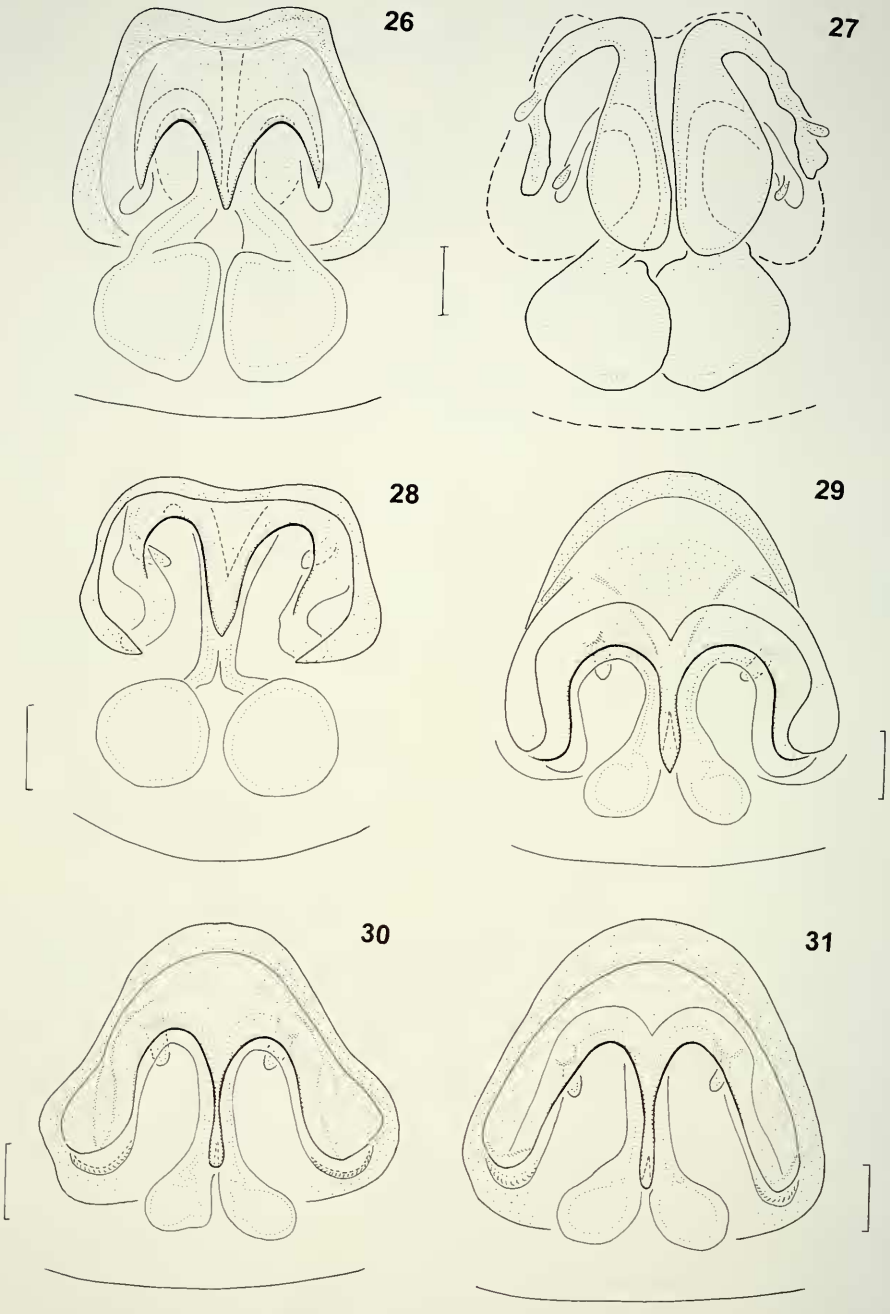
Distribution. Italy, Balkans, China (first record for Greece).

Setaphis carmeli (O. P.-Cambridge, 1872) Figs 40-41, 118

Identification: Levy (1998, p. 96, Figs 2-5), Platnick and Murphy (1996, p. 6, Figs 5-8).

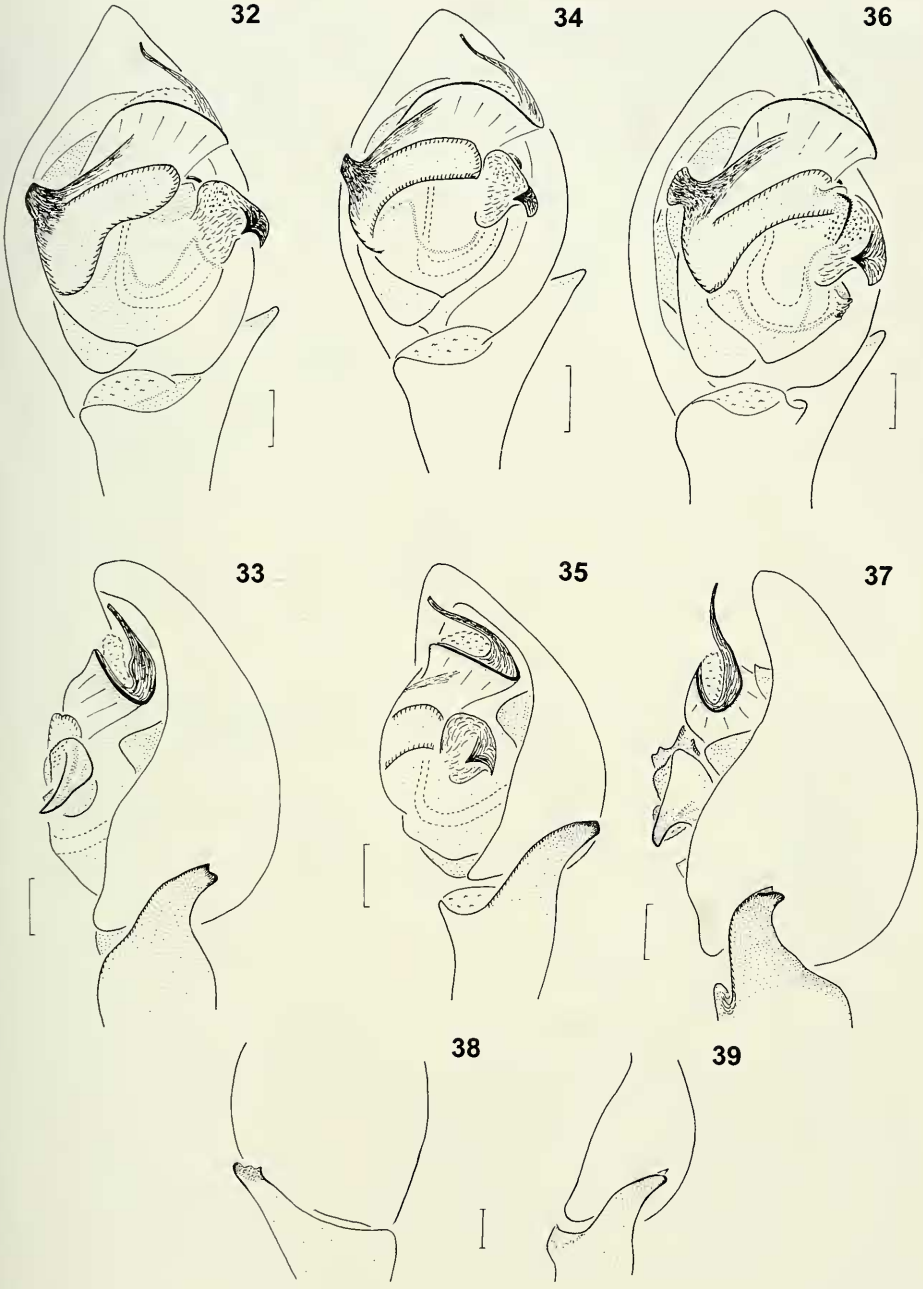
Material. CRETE: CHANIA: Site 6 (c 2 ♂♂) (leg. Lymberakis); RETHYMNO: Site 25 (a 3 ♂♂) (leg. Lymberakis); IRAKLEIO: Site 44 (a 1 ♂); Site 47 (a 1 ♂) (all leg. Nikolakakis); LASITHI: Site 63 (a 1 ♂) (leg. Stathi).

Comparative material examined: *S. carmeli*: Israel, Golan heights, Odem forest (1♂, 5/1997, leg. Sharon, HUJ 15221).



FIGS 26-31

Trachyzelotes barbatus (26-27), *T. malkini* (28), *T. lyonneti* (29), *T. adriaticus* (30-31). Epigyne (26, 28-29, 30), vulva (27, 31). Scale lines 0.1mm.



FIGS 32-39

Trachyzelotes adriaticus. Specimens from Crete (32-33, 38-39), Gavdopoula (34-35) and Antikythira (36-37). Palp of ♂, ventral view (32, 34, 36), retrolateral view (33, 35, 37, 39), tibial apophysis, dorsal view (38). Scale lines 0.1mm.

Taxonomy. The characters of our specimens fit the descriptions and drawings by both Levy (1998) and Platnick & Murphy (1996). In our specimens, the embolus is long, forming two coils (Fig. 40). The examination of a male from Israel verified the identity of our specimens. Females have not yet been captured on Crete.

Ecology. *S. carmeli* was found only in the lowlands of Crete and is not very common (Fig. 118).

Distribution. Mediterranean (first record for Greece).

Zelotes aerosus Charitonov, 1946 Figs 42-43, 118

Identification: Charitonov (1946, p. 26, Fig. 41).
Material. CRETE: CHANIA: Site 2 (a 1 ♂) (leg. Lymberakis).

Taxonomy. This species was described by Charitonov (1946) from Uzbekistan and has not been recorded in the literature ever since. Although the type was not available to us, we feel sure that our specimen belongs to *Z. aerosus*, because of the shape of the tibial apophysis and the characteristic embolus, transversing the tegulum in its middle. Only one male prosoma was found in our collection.

♂ Pedipalp (Figs 42-43): Tibial apophysis long, with tapering end. Embolus starting at anterior part of tegulum with a broad base, then abruptly narrowed, filiform, forming a loop at the retrolateral side of the tegulum. Apical part of the tegulum with a conductor-like apophysis (A), composed of a tapering sclerotized process and a membrane.

Comments. Two distinct characters of the palpal organ, i.e. the embolar base and the tegular process, as well as the shape of the female epigyne (see Charitonov 1946, Fig. 42), separate *Z. aerosus* from other zelotines. Its generic placement should be re-evaluated when more material is available.

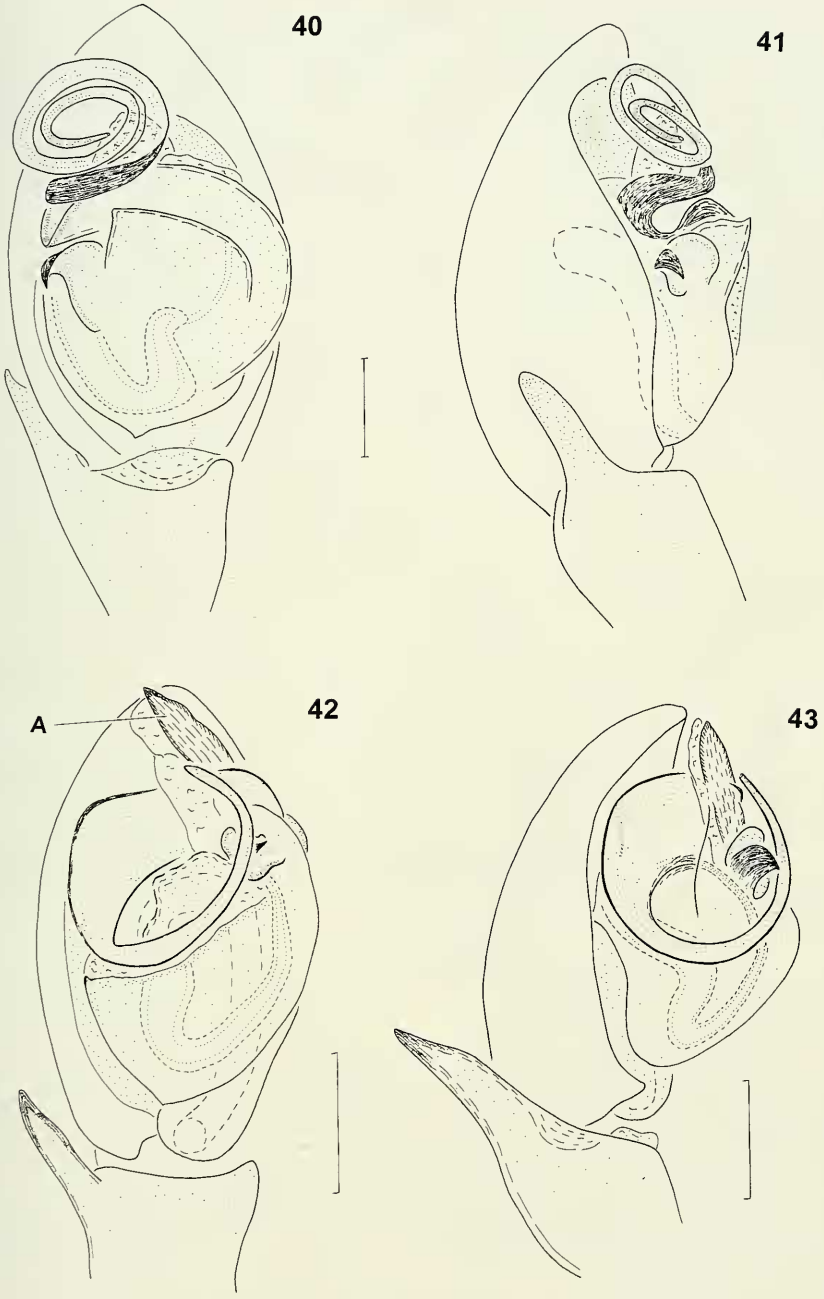
Ecology. *Z. aerosus* has been collected only at one locality, in phrygana close to the sea (Site 2).

Distribution. Uzbekistan, Crete (first record for Europe).

Zelotes caucasius (L. Koch, 1866) Figs 44-45, 48-49, 119

Identification: Levy (1998, p. 137, Figs 92-96), Grimm (1985, p. 281, Figs 231, 234-235).

Material. CRETE: CHANIA: Site 1 (a 14 ♂♂ 8 ♀♀; b 2 ♂♂ 14 ♀♀; c 1 ♂ 2 ♀♀); Site 2 (a 14 ♂♂ 5 ♀♀; b 18 ♂♂ 23 ♀♀); Site 3 (a 10 ♂♂ 6 ♀♀; b 5 ♀♀); Site 4 (a 2 ♀♀; b 2 ♂♂ 1 ♀; c 1 ♀); Site 5 (a 3 ♂♂ 1 ♀; b 4 ♀♀); Site 6 (f 1 ♀; g 1 ♀); Site 7 (e 1 ♂; f 4 ♀♀; g 3 ♀♀); Site 8 (f 8 ♂♂ 5 ♀♀; g 4 ♀♀; h 1 ♀) (all leg. Lymberakis); Site 13 (a 2 ♂♂ 16 ♀♀); Site 13 (c 10 ♂♂ 6 ♀♀; d 12 ♂♂ 19 ♀♀); Site 14 (a 3 ♂♂ 11 ♀♀; b 3 ♀♀; c 27 ♂♂ 14 ♀♀; d 19 ♂♂ 44 ♀♀); Site 15 (c 5 ♂♂ 5 ♀♀ [MHNG]; d 2 ♂♂ 5 ♀♀); Site 16 (a 1 ♂ 5 ♀♀; c 5 ♂♂ 8 ♀♀; d 6 ♂♂ 1 ♀); Site 17 (c 1 ♂); Site 18 (a 9 ♀♀; c 2 ♂♂ 7 ♀♀; d 24 ♂♂ 11 ♀♀); Site 19 (c 2 ♂♂ 1 ♀; d 1 ♂ 2 ♀♀); Site 20 (a 2 ♂♂; b 4 ♂♂ 7 ♀♀); Site 22 (a 1 ♂ 1 ♀; b 2 ♂♂); Site 23 (a 1 ♂; c 22 ♂♂ 19 ♀♀) (all leg. Paragamian); RETHYMNO: Site 35 (a 1 ♀); Site 36 (a 19 ♂♂ 7 ♀♀) (all leg. Trichas); Site 27 (a 9 ♂♂ 4 ♀♀); Site 34 (a 3 ♂♂ 1 ♀; b 2 ♀♀); Site 37 (a 15 ♂♂ 10 ♀♀; b 9 ♀♀; c 3 ♀♀; e 6 ♂♂); Site 55 (b 9 ♂♂ 42 ♀♀) (all leg. Chatzaki); Site 25 (a 23 ♂♂ 8 ♀♀; b 5 ♂♂ 4 ♀♀; Site 26 (b 1 ♀) (all leg. Lymberakis); Site 28 (a 5 ♂♂ 1 ♀; b 9 ♂♂ 15 ♀♀); Site 29 (b 1 ♂ 1 ♀); Site 32 (a 14 ♂♂ 10 ♀♀; b 15 ♀♀); Site 39 (a 2 ♂♂: b 6 ♂♂ 21 ♀♀); Site 40 (b 29 ♂♂ 17 ♀♀; c 20 ♂♂ 22 ♀♀); Site 41 (a 43 ♂♂ 22 ♀♀; b 4 ♂♂ 57 ♀♀) (all leg. Nikolakakis); IRAKLEIO: Site 43 (a 4 ♂♂ 2 ♀♀; b 12 ♂♂ 26 ♀♀; c 6 ♀♀); Site 44 (a 5 ♂♂; b 8 ♂♂ 9 ♀♀; c 4 ♀♀); Site 45 (a 4 ♂♂ 9 ♀♀; b 5



FIGS 40-43

Setaphis carmeli (40-41), *Zelotes aerosus* (42-43). Palp of ♂, ventral view (40, 42), retrolateral view (41, 43). A: conductor-like apophysis. Scale lines 0.1mm.

♀♀); Site 47 (b 12 ♂♂ 13 ♀♀; c 1 ♀); Site 52 (b 6 ♂♂ 7 ♀♀); Site 53 (b 5 ♂♂ 3 ♀♀) (all leg. Nikolakakis); Site 46 (a 21 ♂♂ 38 ♀♀; b 17 ♀♀); Site 49 (a 6 ♂♂; b 11 ♂♂ 7 ♀♀; c 1 ♀); Site 51 (a 4 ♂♂ 2 ♀♀; b 1 ♀) (all leg. Papadimitrakis); Site 48 (a 2 ♀♀) (leg. Trichas); LASITHI: Site 27 (b 2 ♂♂); Site 55 (a 7 ♂♂ 4 ♀♀ [CTh]); Site 56 (a 5 ♂♂ 2 ♀♀); Site 57 (a 59 ♂♂ 62 ♀♀; b 4 ♀♀); Site 73 (a 8 ♂♂ 27 ♀♀; b 2 ♂♂ 1 ♀; e 1 ♂) (all leg. Chatzaki); Site 58 (a 4 ♂♂ 13 ♀♀; b 2 ♀♀); Site 62 (a 2 ♀♀); Site 64 (d 3 ♂♂ 4 ♀♀); Site 65 (a 1 ♂ 3 ♀♀); Site 68 (a 2 ♀♀) (all leg. Papadimitrakis); Site 63 (a 1 ♂; b 1 ♂ 4 ♀♀); Site 71 (a 6 ♂♂ 1 ♀; b 51 ♂♂ 41 ♀♀; c 7 ♀♀) (all leg. Stathi); Site 61 (a 1 ♂); Site 70 (b 1 ♂); Site 72 (a 1 ♀) (all leg. Trichas).

KOS: Kefalos – Ag. Ioannis, 1 km S, phrygana and adjacent pine forest, (1 ♂ 5 ♀♀, pitfall traps 26/6/2001 – 9/9/2001, leg. Chatzaki).

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (1 ♂ 3 ♀♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

ANTIKYTHIRA: Potamos, 700m W: sparse phrygana on sandy soil close to the village, (38 ♂♂ 34 ♀♀, pitfall traps 27/3/2001 – 5/8/2001, leg. Chatzaki).

Taxonomy. *Z. caucasius* is a well-defined species, occurring in the whole Mediterranean region, its range extending to Central Europe, with northernmost localities in Slovakia and eastern Austria. Males are characterised by a prolateral tegular apophysis (TA) and a very long, curved embolus with a broad embolar base which forms a pointed retrolateral tip. In our specimens the tegular apophysis is lying close to the tegulum, whereas in the drawings of Levy (1998, Figs 92-93) it is directed to one side. The epigyne of females is characterised by an entire, transverse anterior margin, followed by a posterior one, leading into a large atrium. The introductory channels are situated between two large pouches, a smaller ventral pouch and a larger dorsal one, which underly almost the entire surface of the epigyne. As stated by Levy (1998), these characters clearly separate *Z. caucasius* from all other *Zelotes*.

Ecology. This species has been captured very frequently in pitfall traps, as was also the case in Israel (Levy, 1998). It is very common on Crete, having been collected from most of the sites investigated (Fig. 119) and in great numbers. It is also present on all south Aegean islands investigated in this study. Adults occur during the whole year, with a peak of activity of females in mid-summer and of males in late spring and in early autumn.

Distribution. Europe to Central Asia.

Zelotes solstitialis Levy, 1998 Figs 46-47, 50-51, 118

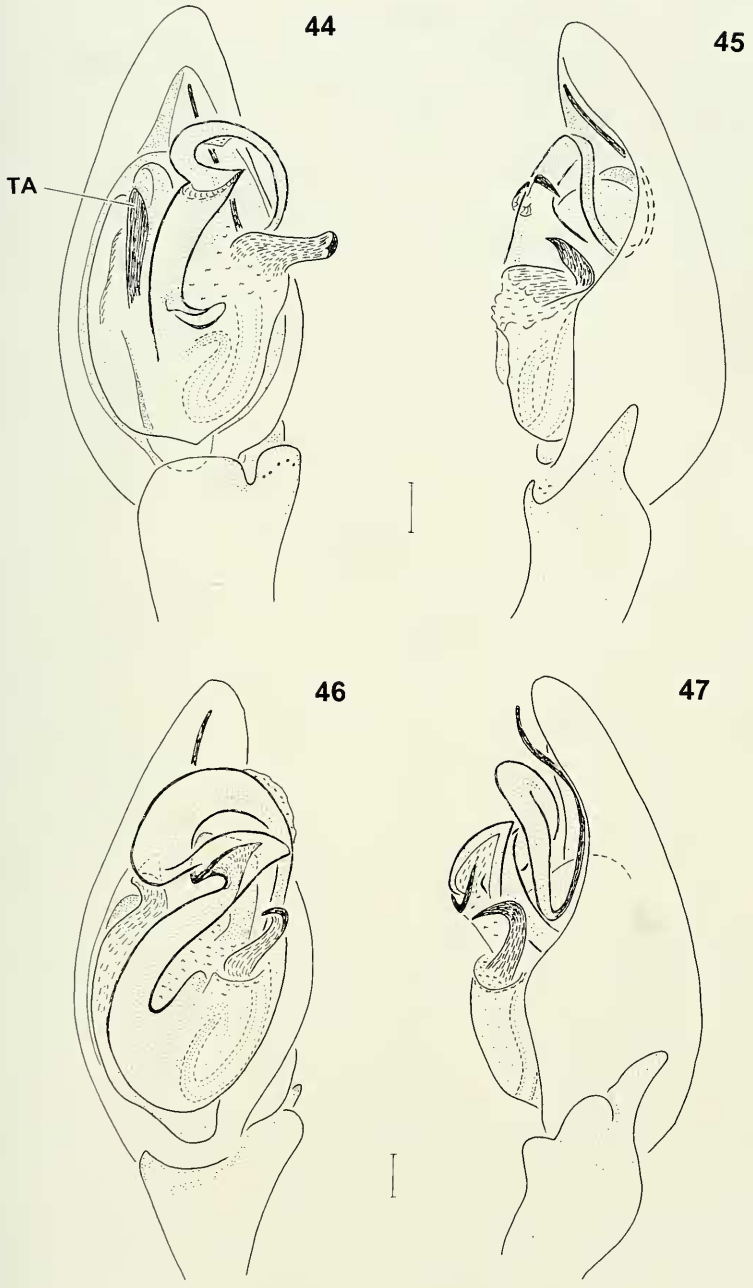
Identification: Levy (1998, p. 139, Figs 97-101).

Material. CRETE: RETHYMNO: Site 39 (b 1 ♀); Site 40 (c 22 ♀♀; d 2 ♂♂ 4 ♀♀ [CTh]); Site 41 (b 1 ♀) (all leg. Nikolakakis); IRAKLEIO: Site 47 (c 7 ♂♂ 10 ♀♀; d 2 ♀♀) (all leg. Nikolakakis); Site 46 (b 2 ♀♀); Site 50 (d 1 ♂ 2 ♀♀) (all leg. Papadimitrakis); LASITHI: Site 27 (b 1 ♀) (leg. Chatzaki); Site 64 (d 1 ♂; e 16 ♂♂ 16 ♀♀) (all leg. Papadimitrakis); Site 64 (f 5 ♂♂ 6 ♀♀) (leg. Nikolakakis); Site 63 (c 1 ♂) (leg. Stathi).

KOS: Kefalos – Ag. Ioannis, 1 km S, phrygana and adjacent pine forest, (1 ♂ 5 ♀♀, pitfall traps 26/6/2001 – 9/9/2001, leg. Chatzaki).

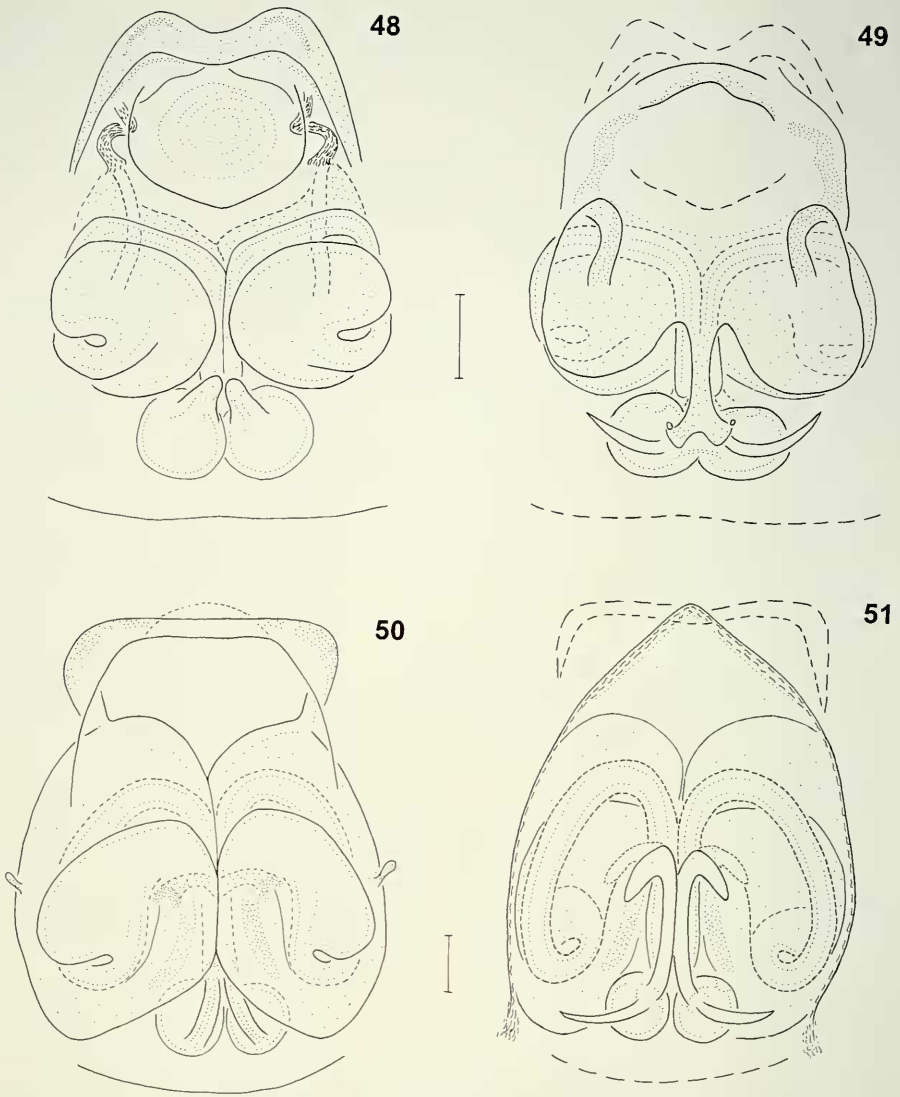
PELOPONNISOS: Mainalo Mt., alpine phrygana (2 ♂♂, pitfall traps 9/7/1997 – 12/10/1997, leg. Anastasiou).

Taxonomy. This species is very close to *Z. caucasius*. Apart from *Z. solstitialis* being larger, the two species differ in the following characters: in males of *Z. solstitialis* there is no prolateral tegular apophysis, the retrolateral tip of the embolar base is more pronounced and the embolus itself is longer, reaching almost to the tip of the



FIGS 44-47

Zelotes caucasius (44-45), *Z. solstitialis* (46-47). Palp of ♂, ventral view (44, 46), retrolateral view (45, 47). TA: tegular apophysis. Scale lines 0.1mm.



FIGS 48-51

Zelotes caucasius (48-49), *Z. solstitialis* (50-51). Epigyne (48, 50), vulva (49, 51). Scale lines 0.1mm.

cymbium. The tibial apophysis in *Z. solstitialis* has an additional broad, ventral lobe. Female genitalia differ in the shape of the central opening, in the dimensions of the two pouches, and in the course of the introductory ducts. A small gland exists on the lateral side of each dorsal pouch.

Ecology. As already stated by Levy (1998), adults of this species occur only during the dry months of summer and early autumn.

Distribution. Israel, Syria? (first record for Europe).

Zelotes subterraneus (C. L. Koch, 1833) Figs 52-56, 120

Identification: Grimm (1985, p. 227, Figs 282, 303-304).

Material. CRETE: CHANIA: Site 2 (a 1 ♀; c 26 ♂♂ 1 ♀; d 1 ♀; e 2 ♀♀; f 8 ♀♀ [CTh]); Site 3 (c 33 ♂♂ 2 ♀♀; d 17 ♀♀; e 3 ♀♀); Site 5 (a 1 ♀; c 12 ♂♂ 5 ♀♀); Site 6 (a 4 ♀♀; b 2 ♀♀; c 3 ♀♀; h 38 ♂♂ 1 ♀; i 2 ♂♂ 9 ♀♀; j 4 ♀♀; k 1 ♀; l 4 ♀♀; m 1 ♀); Site 7 (i 9 ♂♂) (all leg. Lymberakis); Site 14 (a 1 ♂; b 1 ♂ 1 ♀; c 1 ♀); Site 15 (c 3 ♂♂ 1 ♀); Site 16 (a 4 ♂♂; b 7 ♀♀; c 6 ♀♀); Site 18 (a 2 ♂♂ 1 ♀; b 1 ♂); Site 19 (b 1 ♀); Site 21 (a 2 ♂♂) (all leg. Paragamian); RETHYMNO: Site 27 (a 2 ♀♀; b 15 ♂♂ 1 ♀; c 24 ♂♂ 18 ♀♀; d 2 ♂♂ 9 ♀♀; e 1 ♂ 4 ♀♀; f 14 ♀♀); Site 34 (b 10 ♂♂; c 3 ♂♂ 2 ♀♀; d 4 ♀♀); Site 37 (b 12 ♂♂; c 18 ♀♀; d 14 ♀♀; e 2 ♀♀); Site 38 (a 1 ♂ 11 ♀♀ b 4 ♀♀) (all leg. Chatzaki); Site 25 (c 16 ♂♂ 3 ♀♀) (leg. Lymberakis); Site 24 (a 1 ♀) (leg. Stathi); Site 28 (a 2 ♀♀); Site 29 (b 6 ♂♂); Site 32 (b 9 ♂♂); Site 39 (b 5 ♀♀); Site 40 (b 1 ♀; d 37 ♂♂ 9♀♀; e 1 ♀); Site 41 (a 4 ♀♀) (all leg. Nikolakakis); Site 30 (a 1 ♀); Site 33 (a 2 ♂♂ 2 ♀♀); Site 35 (a 1 ♂); Site 36 (a 1 ♀) (all leg. Trichas); IRAKLEIO: Site 42 (e 12 ♀♀; f 2 ♀♀; h 2 ♀♀; i 53 ♂♂ 11 ♀♀; j 20 ♂♂ 15 ♀♀; h 15 ♂♂; k 8 ♀♀) (all leg. Chatzaki); Site 43 (a 3 ♀♀; c 2 ♂♂ 1 ♀); Site 44 (a 4 ♀♀; c 7 ♂♂); Site 45 (a 2 ♀♀); Site 47 (a 2 ♀♀; b 7 ♂♂ 10 ♀♀; c 9 ♂♂; d 14 ♂♂ 6 ♀♀; e 2 ♀♀); Site 50 (a 4 ♀♀; d 4 ♂♂; e 31 ♂♂ 8 ♀♀); Site 52 (a 3 ♀♀; b 1 ♀; c 44 ♂♂ 6 ♀♀); Site 53 (a 1 ♀; c 20 ♂♂ 12 ♀♀); Site 54 (a 2 ♀♀; c 17 ♂♂ 3 ♀♀) (all leg. Nikolakakis); Site 46 (b 23 ♂♂); Site 49 (a 1 ♀; b 1 ♀; c 15 ♂♂); Site 51 (b 3 ♂♂) (all leg. Papadimitrakis); Site 48 (a 1 ♂) (leg. Trichas); LASITHI: Site 55 (a 5 ♀♀; b 36 ♂♂ 4 ♀♀; c 21 ♂♂ 7 ♀♀; d 1 ♀; e 1 ♀); Site 56 (a 1 ♀; b 16 ♂♂ 2 ♀♀; c 1 ♀); Site 57 (a 1 ♂ [CTh]; b 5 ♂♂ 1 ♀; c 2 ♀♀ [MHNG]); Site 73 (a 3 ♀♀; b 8 ♂♂ [MHNG]; c 26 ♂♂ 12 ♀♀; d 2 ♀♀; e 4 ♀♀) (all leg. Chatzaki); Site 71 (a 8 ♀♀; c 1 ♀; d 14 ♂♂) (all leg. Stathi); Site 64 (a 2 ♂♂ 1 ♀; c 3 ♀♀; e 5 ♂♂; f 28 ♂♂ 7 ♀♀) (all leg. Nikolakakis); Site 58 (b 10 ♂♂ 1 ♀); Site 62 (a 4 ♀♀; b 16 ♂♂ 1 ♀); Site 65 (a 2 ♀♀); Site 68 (b 5 ♂♂) (all leg. Papadimitrakis); Site 63 (a 6 ♀♀; c 38 ♂♂ 8 ♀♀); Site 60 (a 2 ♀♀); Site 71 (c 31 ♂♂; d 1 ♀; e 3 ♀♀) (all leg. Stathi); Site 59 (a 1 ♂; b 2 ♂♂ 1 ♀; c 1 ♂); Site 61 (a 14 ♂♂ 3 ♀♀; b 14 ♂♂ 4 ♀♀); Site 66 (a 2 ♀♀); Site 67 (a 2 ♂♂ 3 ♀♀); Site 70 (b 3 ♂♂ 7 ♀♀); Site 72 (a 2 ♀♀; b 12 ♂♂) (all leg. Trichas).

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (5 ♀♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

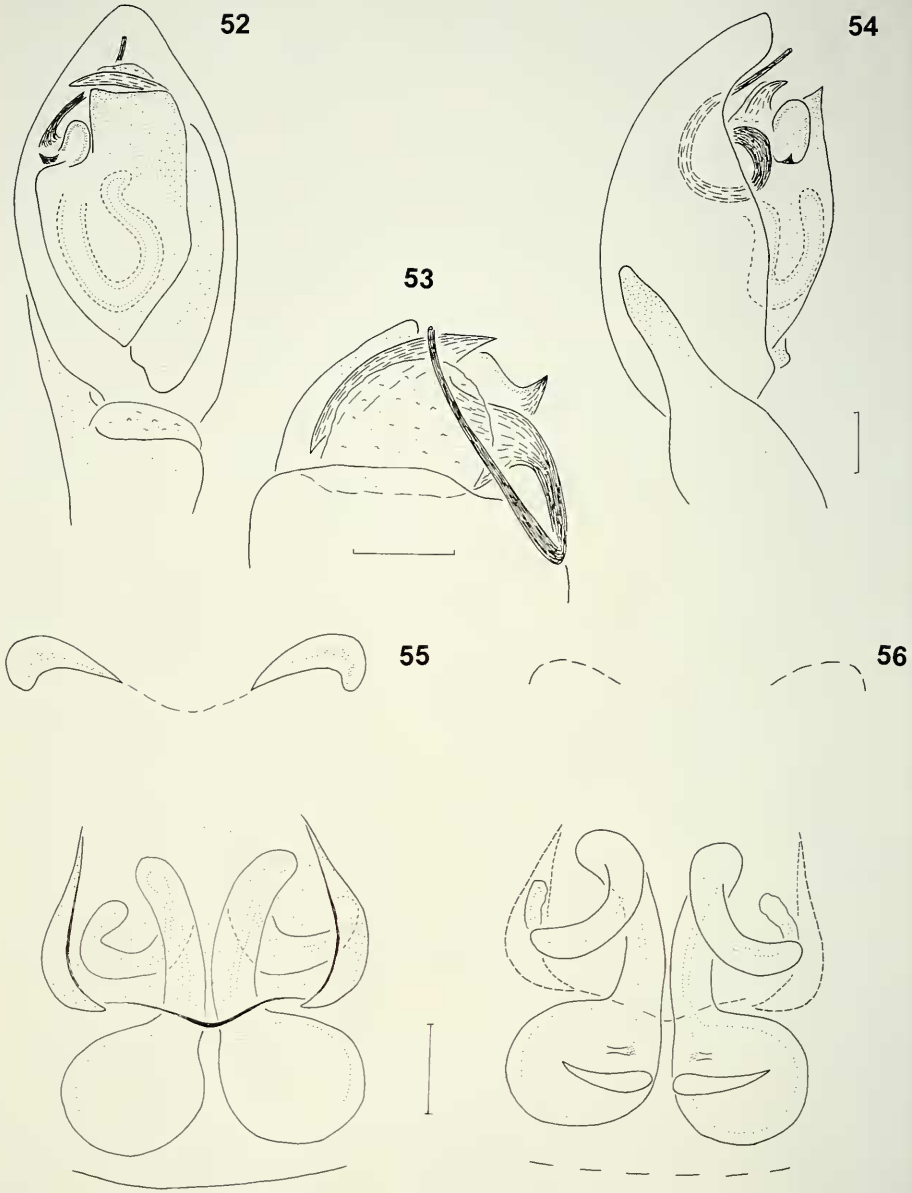
PELOPONNISOS: Mainalo Mt., alpine phrygana (2 ♀♀, pitfall traps 9/7/1997 – 12/10/1997, leg. Anastasiou).

Comparative material examined: *Z. subterraneus*: Austria, N. Tirol, Halltal 1000-1200m (3♀♀, 13/6/1992, leg. Knoflach); Austria, N. Tirol, Ötztal, Längenfeld (1♂, 8/8/1992, leg. Knoflach).

Taxonomy. This species clearly belongs to the *subterraneus* group. Among the central-European species of the group recorded by Grimm (1985), *Z. subterraneus* is closest to our specimens, albeit rather larger in size (TL ♂ = 5.7-7.8, ♀ = 5.8-9.2, according to Grimm versus TL ♂ = 3.8-6.8, ♀ = 6.4-9.2) and deviating slightly in the shape of the vulva. However, male characters fit well the description by Grimm (see Figs 52-56). A decision about the status of these populations is postponed until more material from Northern Greece is available.

Ecology. Z. subterraneus is common all over Crete, Gavdos and Dia (Fig. 120). Adult females are present throughout the year, males are very rare in the dry period. The peak of activity of both males and females occurs in autumn to early winter. *Z. subterraneus* is one of the very few zelotines collected in the pitfall traps during wintertime.

Distribution. Trans-Palearctic, in the temperate and boreal zones, recently recorded from Bulgaria (Deltshev & Blagoev, 2001) (first record for Greece).



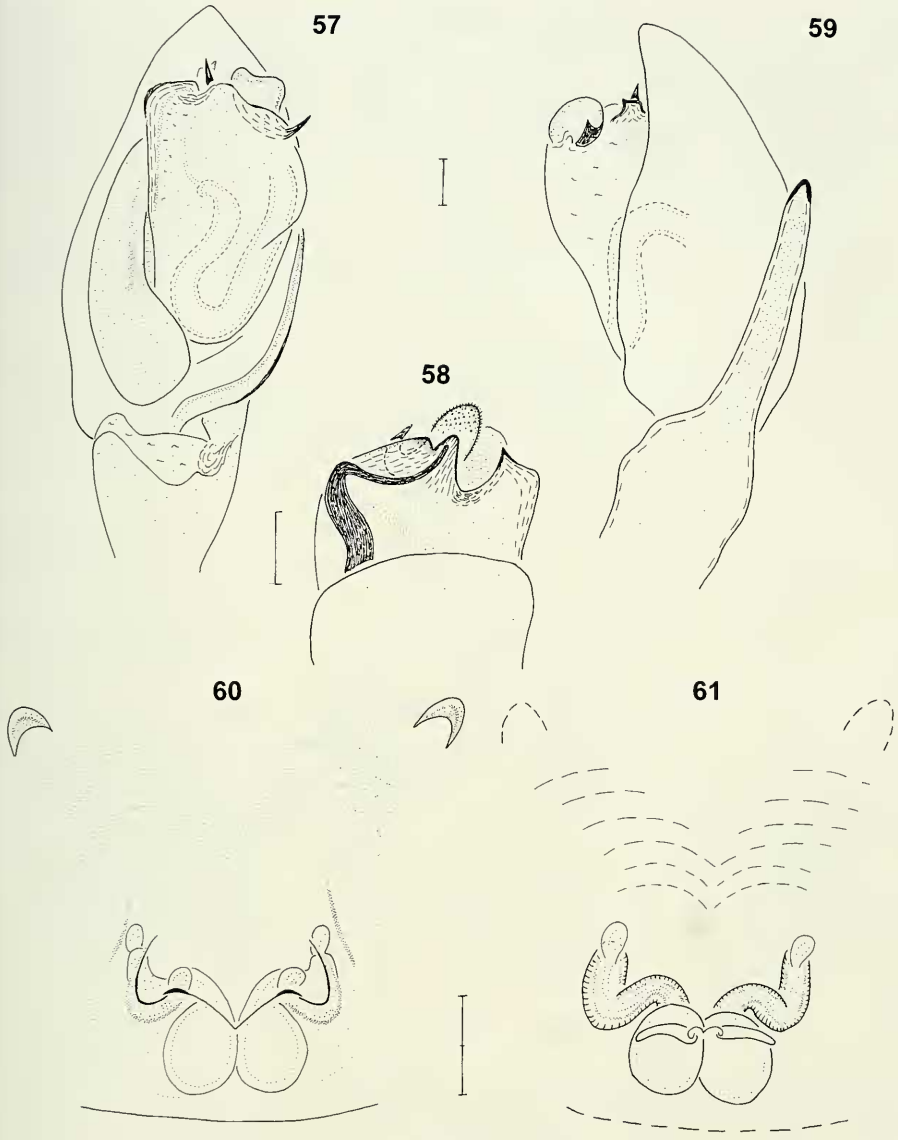
FIGS 52-56

Zelotes subterraneus. Palp of ♂, ventral view (52), dorsal view (53), retrolateral view (54), epigyne (55), vulva (56). Scale lines 0.1mm.

Zelotes creticus (Kulczyński, 1903) Figs 57-61, 121

Identification: Kulczyński (1903, p. 42, Fig. 4).

Material. CRETE: CHANIA: Site 5 (a 5 ♀♀; b 1 ♀; c 23 ♂♂ 4 ♀♀); Site 6 (a 1 ♂; b 1 ♀; c 2 ♀♀; d 1 ♀; e 8 ♀♀; h 5 ♂♂; i 7 ♂♂ [CTh]; l 1 ♂ 1 ♀); Site 7 (a 1 ♂; b 8 ♀♀; c 2



FIGS 57-61

Zelotes creticus. Palp of ♂, ventral view (57), dorsal view (58), retrolateral view (59), epigyne (60), vulva (61). Scale lines 0.1mm.

♀♀; d 9 ♀♀; e 13 ♀♀; f 3 ♀♀; g 18 ♂♂; h 38 ♂♂; h 5 ♀♀; i 1 ♂ 2 ♀♀; j 3 ♀♀); Site 8 (a 3 ♂♂; b 4 ♂♂; d 1 ♀; f 1 ♀; h 4 ♂♂ 1 ♀; i 11 ♂♂ 1 ♀; j 2 ♂♂; k 1 ♀); Site 9 (a 8 ♂♂ 1 ♀; b 7 ♂♂ 1 ♀; c 3 ♀♀; d 3 ♀♀; e 7 ♂♂; f 4 ♂♂; g 1 ♂ 2 ♀♀) (all leg. Lymberakis); Site 11 (a 1 ♀; b 3 ♀♀); Site 12 (e 1 ♀) (all leg. Stathi); RETHYMNO: Site 25 (a 7 ♀♀; c 25 ♂♂ 4 ♀♀); Site 26 (a 4 ♀♀; b 1 ♀; c 15 ♂♂ 3 ♀♀) (all leg. Lymberakis); Site 32 (a 12 ♀♀; b 10 ♂♂ 5 ♀♀); Site 40 (a 7 ♀♀ [CTh]; b 6 ♀♀; c 2 ♂♂; d 47 ♂♂ 7 ♀♀; d 3 ♂♂ 3 ♀♀ [MHNG]; e 1 ♀) (all leg. Nikolakakis).

Taxonomy. Zelotes creticus was described by Kulczyński (1903) based on two female specimens and the species has not been revised since that time. We collected females of this species together with their males, which we present here for the first time.

Measurements ♂(♀), n = 13 (12): TL: 5.6-7.4 (6-9.1), PL: 2.4-3.4 (2.6-3.6), PW: 1.8-2.6 (2-2.8), OL: 2.8-3.7 (2.6-5.1), PL/PW: 1.19-1.66 (1.18-1.4).

♂♀: Large spiders of dark colour. Eyes round. Posterior and anterior rows of eyes straight. Males with large, brown scutum on the opisthsoma.

Legs: Me III-IV with apical preening combs. Ta and Me I-II with stripes of ventral scopula hairs, Ta and Me III-IV with dense spiny hairs. Spination: Fe: I d 2; II d 3; III d 3-5; IV d 2-4. Pa: I-II, IV - ; III r 1. Ti: I-II - ; III-IV spinose. Me: I-II - ; III-IV spinose.

♂ Pedipalp (Figs 57-59): Tibial apophysis slender, straight, longer than $^1/_2$ of the length of the cymbium. Tegulum robust, with a sharp projection at its anterior/prolateral edge, probably corresponding to terminal apophysis. Embolus short, filiform, transverse, starting from dorsal/retrolateral front of tegulum, retinaculum at its anterior/retrolateral corner.

Epigyne (Fig. 60): Anterior margins small, cap-like, far in front of the areola. Lateral margins relatively short, curved; posterior margin faint, biconvex. Introductory orifices at the edge of lateral and posterior margins.

Vulva (Fig. 61): Introductory ducts short and sclerotized, transverse, with glandular heads at their anterior ends. Spermathecae globular, with fertilisation ducts situated at their anterior part.

Ecology. Z. creticus is common in the middle to high altitudes of the mountains of western Crete, but absent from eastern Crete. Also the type material of Kulczyński was collected from middle altitudes of western Crete (Chania, Askifou, 1000m). The species has also been caught three times in phrygana of the lowland (Sites 25, 26 and 32) (Fig. 121). Together with *Callilepis cretica*, *Drassodes lapidosus*, *Drassyllus praeficus* and others (see also Chatzaki *et al.* 2002 a, b), *Z. creticus* belongs to the few gnaphosid species which become more numerous with increasing altitude. The peak of activity of males occurs in late summer and of females in late spring and early autumn.

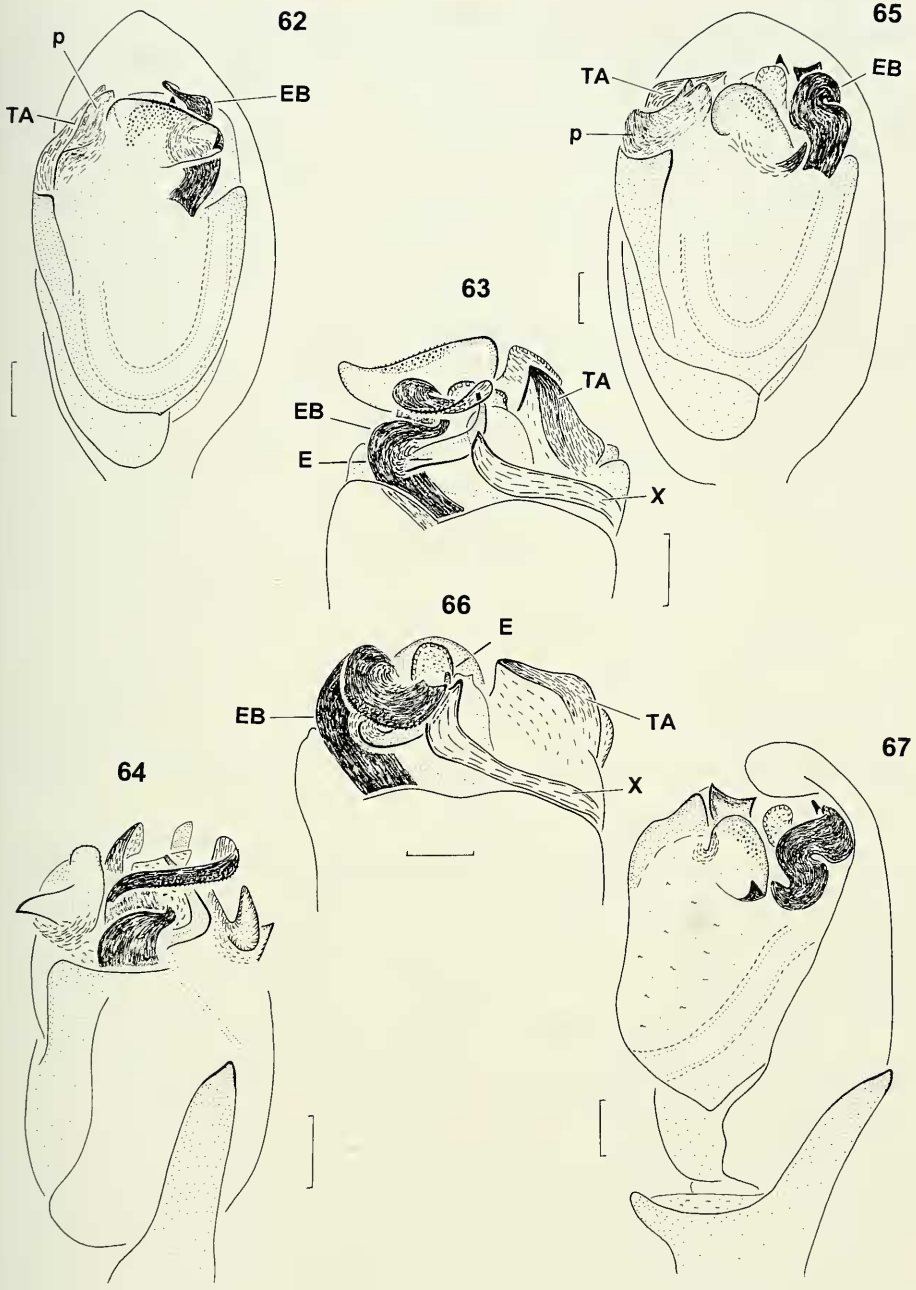
Distribution. Crete (endemic).

Zelotes* cf. *ilotarum (Simon, 1884) Figs 62-64, 68-69, 121

Material. CRETE: CHANIA: Site 4 (c 2 ♂♂ 1 ♀) (leg. Lymberakis); IRAKLEIO: Site 44 (a 9 ♂♂ 6 ♀♀; b 1 ♀); Site 47 (a 9 ♀♀; b 6 ♀♀; d 27 ♂♂ 2 ♀♀ d 2 ♂♂ 2 ♀♀ [MHNG]; e 6 ♀♀ [CTh]) (all leg. Nikolakakis); Site 49 (a 1 ♂ [CTh]; a 5 ♀♀; b 2 ♀♀; c 5 ♂♂ 3 ♀♀); Site 51 (a 21 ♀♀; b 29 ♂♂ 1 ♀) (all leg. Papadimitrakis); LASITHI: Site 59 (a 59 ♂♂ 12 ♀♀; b 8 ♂♂ 1 ♀; c 38 ♂♂ 20 ♀♀) (all leg. Trichas).

Comparative material examined: *Z. ilotarum*: Peloponnisos, Aigio (2 ♂♂, 3/4/1939, Col. Hadjissarantos, 2780, ZMUA); Attiki, Kato Souli (4 ♀♀, 14/4/1939, Col. Hadjissarantos, 2781, ZMUA).

Taxonomy. Z. ilotarum was described by Simon (1884) on the basis of females from Naxos and Athens. It was rediscovered in Peloponnisos and Attiki by Hadjissarantos (1940), who presented the first illustration of the epigyne and described the male for the first time (p. 82, Figs 26-27). This species is characterised by the distinct shape of the embolic division (EB and E) of the male palp (Figs 65-67) and by



FIGS 62-67

Zelotes cf. *ilotarum* (62-64), *Z. ilotarum* (65-67). Palp of ♂, ventral view (62, 65), dorsal view (63, 66), retrolateral view (64, 67). TA: terminal apophysis, p: prolateral process, EB: embolar base, E: embolus X: dorsal extension. Scale lines 0.1mm.

the female epigyne, which is narrow compared to its length (Figs 70-71). The prominent edge of the tegulum has a prolateral process (p), a dorsal extension (X) of the intercalary sclerite (sensu Platnick & Shadab, 1983) and a transverse terminal apophysis (TA), which are also dinstinctive characters. We have found males and females of a species from Crete, which is very close to *Z. ilotarum*, but not identical, as will be discussed later.

Measurements ♂(♀), n = 11 (12): TL: 5.2-7.1 (5.7-9.2), PL: 2.4-3 (2.5-3.5), PW: 1.8-2.4 (2-2.7), OL: 2.6-3.8 (3-4.9), PL/PW: 1.21-1.37 (1.19-1.45).

♂ ♀: Dark brown spiders of medium to large size. Eyes round, posterior and anterior rows straight. Males with large scutum on opisthosoma.

Legs: Me III-IV with apical preening combs. Ta and Me I-II with scopula hairs, Ta and Me III-IV with spiny hairs. Spination: Fe: I-II d 2; III-IV d 3-6. Pa: I-II - ; III-IV r 1. Ti: I-II - ; III-IV spinose. Me: I-II v 2; III-IV spinose.

♂ Pedipalp (Figs 62-64): Tibial apophysis long, tapering. Tegulum robust, strongly sclerotized, with a prolateral process situated at its apical angle (p). Intercalary sclerite of tegulum continuing to dorsal side by a transverse extension (X). Embolic division on retrolateral side of tegulum, with a strong, S- shaped base (EB) bearing microdenticles on its surface and a small sclerotized embolus (E), visible only from the dorsal side of the bulbus. Terminal apophysis (TA) triangular, dorsal. Retinaculum transverse, at apical end of tegulum.

Epigyne (Fig. 68): Anterior margin with two caps, well separated. Lateral margins narrow, parallel to each other, with introductory orifices at their rims.

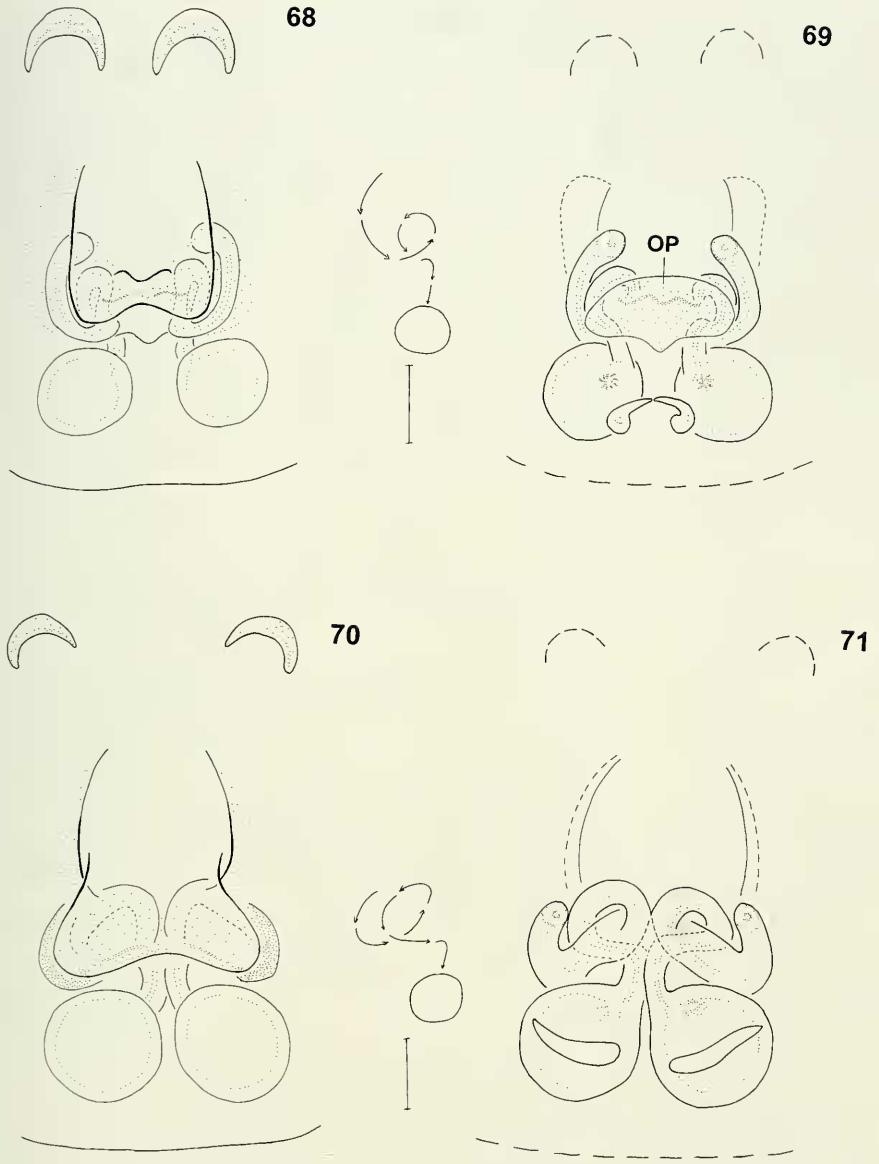
Vulva (Fig. 69): Introductory ducts short, coiled, leading to the centre, to globular spermathecae. Glandular heads located below lateral margins, anterior to the introductory ducts. Dorsal surface of the introductory channels fused to an oval plate (OP).

Comments. Z. ilotarum and our species apparently are very similar. The same structures are present in males as well as in females. However, the 'true' *Z. ilotarum* (sensu Hadjissarantos) differs in the following characters: in males (compare Figs 62-64 and 65-67) the prolateral tegular process (p) is broader; the S-shaped sclerotized embolar base is stronger, its end wider and bifid; the terminal apophysis is more transverse. In females (compare Figs 68-69 and 70-71) the anterior caps are further apart than the width of the lateral margins; the spermathecae are larger and closer together; the glandular heads are at the same level as the introductory ducts. Differences in the oval plate of the females examined are probably due to a difference in age.

When a more thorough knowledge of the gnaphosid fauna of Greece has been obtained and the distributions of the species has become more precisely known, it will be possible to decide whether there already exists a species name available in the literature, or whether this form should be regarded as a variation of *Z. ilotarum* only.

Ecology. Z. cf. *ilotarum* is not very common on Crete (Fig. 121). It has been found at several sites in central and eastern Crete, mainly in the lowlands. It has not been found above 1000m. The peak of activity in males occurs in early autumn and in females in late spring.

Distribution. GREECE: Attiki ?; Peloponnisos ? (Hadjissarantos, 1940); Naxos ? (Simon, 1884); Crete.



FIGS 68-71

Zelotes cf. *ilotarum* (68-69), *Z. ilotarum* (70-71). Epigyne (68, 70), vulva (69, 71). OP: oval plate. Scale lines 0.1mm.

Zelotes scrutatus (O. P.-Cambridge, 1872) Figs 72-76, 122

Drassodes cofiniotes: Roewer, 1928 (p. 105, Fig.10), CRETE: Rethymno, Topolia (type locality); Roewer 1954 (p. 385); Bonnet, 1956 (p. 1563); Levy, 1998.

Zelotes bucharensis Charitonov, 1946: p. 26, Figs 39-40, UZBEKISTAN, Yakkabagh (type locality). **Syn. n.**

Identification: Levy (1998, p. 125, Figs 62-68).

Material. CRETE: CHANIA: Site 1 (a 3 ♂♂ 6 ♀♀; b 4 ♂♂; c 24 ♂♂); Site 2 (a 9 ♂♂ 3 ♀♀; b 1 ♂ 2 ♀♀); Site 3 (a 3 ♂♂; b 1 ♂); Site 4 (a 1 ♀; b 2 ♂♂ 5 ♀♀); Site 5 (a 1 ♂; b 1 ♂) (all leg. Lymberakis); Site 13 (a 2 ♂♂ 10♀♀; c 1 ♂; d 2 ♂♂ 4 ♀♀); Site 14 (a 1 ♂ 1 ♀; c 4 ♀♀; d 3 ♂♂ 2 ♀♀); Site 15 (d 2 ♂♂); Site 16 (d 4 ♂♂ 3 ♀♀); Site 18 (d 1 ♀); Site 19 (a 1 ♂ 5 ♀♀; c 1 ♂ 3 ♀♀; d 5 ♂♂ 2 ♀♀) (all leg. Paragamian); RETHYMNO: Site 25 (a 8 ♂♂; a 2 ♀♀; b 4 ♀♀) (all leg. Lymberakis); Site 27 (a 22 ♂♂ 3 ♀♀; b 8 ♂♂ 2 ♀♀; c 1 ♀; f 1 ♂); Site 34 (a 1 ♂) (all leg. Chatzaki); Site 28 (a 4 ♀♀; b 1 ♂ 2 ♀♀); Site 32 (a 3 ♂♂ 3 ♀♀); Site 39 (a 5 ♂♂ 2 ♀♀; b 2 ♂♂ 2 ♀♀); Site 40 (b 11 ♂♂ 1 ♀; c 4 ♂♂ 4 ♀♀; d 1 ♀); Site 41 (a 11 ♂♂ 2 ♀♀; b 21 ♂♂ 2 ♀♀) (all leg. Nikolakakis); IRAKLEIO: Site 42 (e 2 ♂♂ 1 ♀; g 1 ♀; f 2 ♀♀) (all leg. Chatzaki); Site 44 (a 5 ♂♂ [CTh]; a 2 ♀♀; b 7 ♂♂ 10 ♀♀); Site 47 (a 4 ♂♂ 1 ♀; b 25 ♂♂; b 8 ♀♀ [CTh]; c 2 ♂♂ 5 ♀♀ [MHNG]; e 3 ♂♂) (all leg. Nikolakakis); Site 46 (a 3 ♂♂ 2 ♀♀; b 1 ♀); Site 49 (b 2 ♀♀); Site 50 (c 2 ♂♂ 2 ♀♀; d 1 ♀); Site 51 (a 1 ♀) (all leg. Papadimitrakis); LASITHI: Site 55 (a 4 ♂♂ 1 ♀; b 5 ♂♂ 1 ♀; c 1 ♀); Site 73 (a 1 ♂; b 1 ♀) (all leg. Chatzaki); Site 58 (a 1 ♂); Site 62 (a 1 ♂; b 1 ♂); Site 64 (d 2 ♂♂ 1 ♀; e 1 ♂ 1 ♀) (all leg. Papadimitrakis); Site 63 (b 2 ♂♂); Site 71 (a 3 ♂♂; b 3 ♂♂ 1 ♀; c 1 ♂) (all leg. Stathi); Site 66 (a 3 ♂♂ 3 ♀♀); Site 70 (b 1 ♀) (all leg. Trichas).

PELOPONNISOS: Mainalo Mt., alpine phrygana (1 ♂, pitfall traps 9/7/1997 – 12/10/1997, leg. Anastasiou).

Comparative material examined: *Z. scrutatus*: Israel, Hatira ridge near Sede Boger (1 ♂ 1 ♀, 8/1991, Col. Lubin, 14628).

Taxonomy. The taxonomical characters of this species fit well the description of Levy (1998) and with the specimens received for comparison from Israel (see terminal apophysis (TA), embolar base and tip of embolus in Figs 72-73). In our material, these characters and the shape of the median plate of the females are constant, while the shape of the introductory channel varies, as reported by Levy (1998). *Z. bucharensis* Charitonov, 1946 is proposed here as a new synonym, on the basis of congruence in the shape of the median plate and the tibial apophysis (see Charitonov 1946, Figs 39-40).

Ecology. *Z. scrutatus* is common and widespread all over Crete (Fig. 122), occurring also on the surrounding islands of Gavdos and Dia and on mainland Peloponnisos. On Crete, it reaches altitudes up to 1200m, but seems to prefer the lowlands. Adults' peaks of activity occur from late spring to early autumn.

Distribution. North Africa, Israel, Syria, Uzbekistan; GREECE: Attiki, Kokkinos Mylos (Hadjissarantos, 1940, sub *D. cofiniotes*).

Zelotes minous Chatzaki sp. n. Figs 77-81, 122

Etymology: The name of this species is derived from Minos, king of Crete during the Minoan era; adjective.

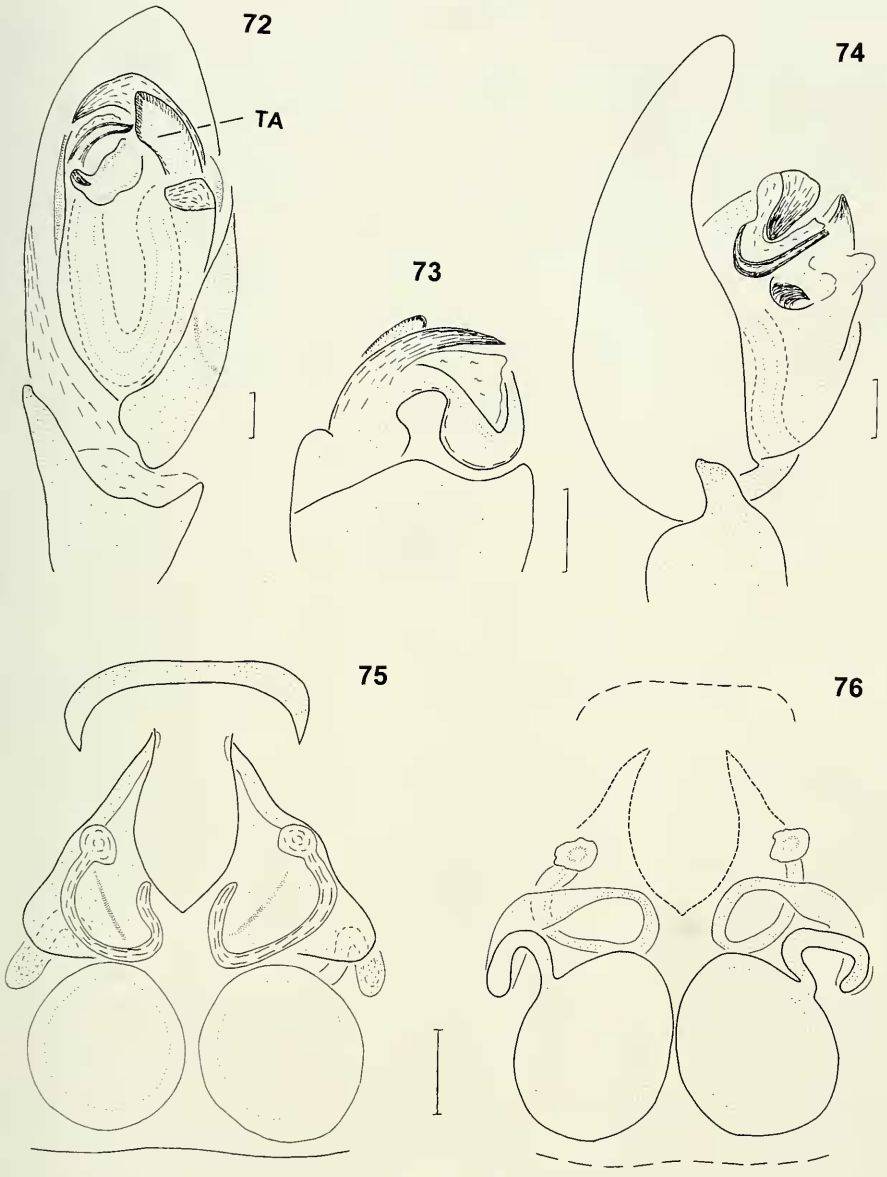
Material. Type material: Site 27a (Eksantis, Agios Kyprianos) (1 ♂ holotype, 4 ♀♀ paratypes, [NHMC]; 1 ♂ 1 ♀ paratypes [MHNG]).

CRETE: CHANIA: Site 1 (b 1 ♀); Site 6 (g 1 ♀) (all leg. Lymberakis); Site 16 (a 1 ♀; d 3 ♀♀); Site 17 (c 1 ♂); Site 19 (d 3 ♂♂) (all leg. Paragamian); RETHYMNO: Site 27 (a 2 ♂♂ 5 ♀♀; b 1 ♀) (all leg. Chatzaki); IRAKLEIO: Site 52 (b 1 ♀); Site 53 (b 1 ♀); Site 54 (b 1 ♂); (all leg. Nikolakakis); LASITHI: Site 55 (a 9 ♂♂; b 2 ♂♂ [CTh]); Site 73 (a 2 ♀♀) (all leg. Chatzaki); Site 63 (b 1 ♀) (leg. Stathi); Site 65 (a 1 ♂) (leg. Papadimitrakis).

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (4 ♂♂ 1 ♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

Comparative material examined: *Z. puritanus* Chamberlin, 1922: Austria, N. Tirol, Innsbruck, Martinswand (3 ♂♂ 1 ♀, pitfall traps 23/4/1963 – 7/6/1963, CTh).

Taxonomy. Measurements ♂(♀), n = 7 (8): TL: 2.9-4.8 (4.4-4.9), PL: 1.5-2.1 (1.7-1.9), PW: 0.9-1.6 (1.3-1.6), OL: 1.4-2.5 (2.3-2.8), PL/PW: 1.2-1.66 (1.13-1.3).

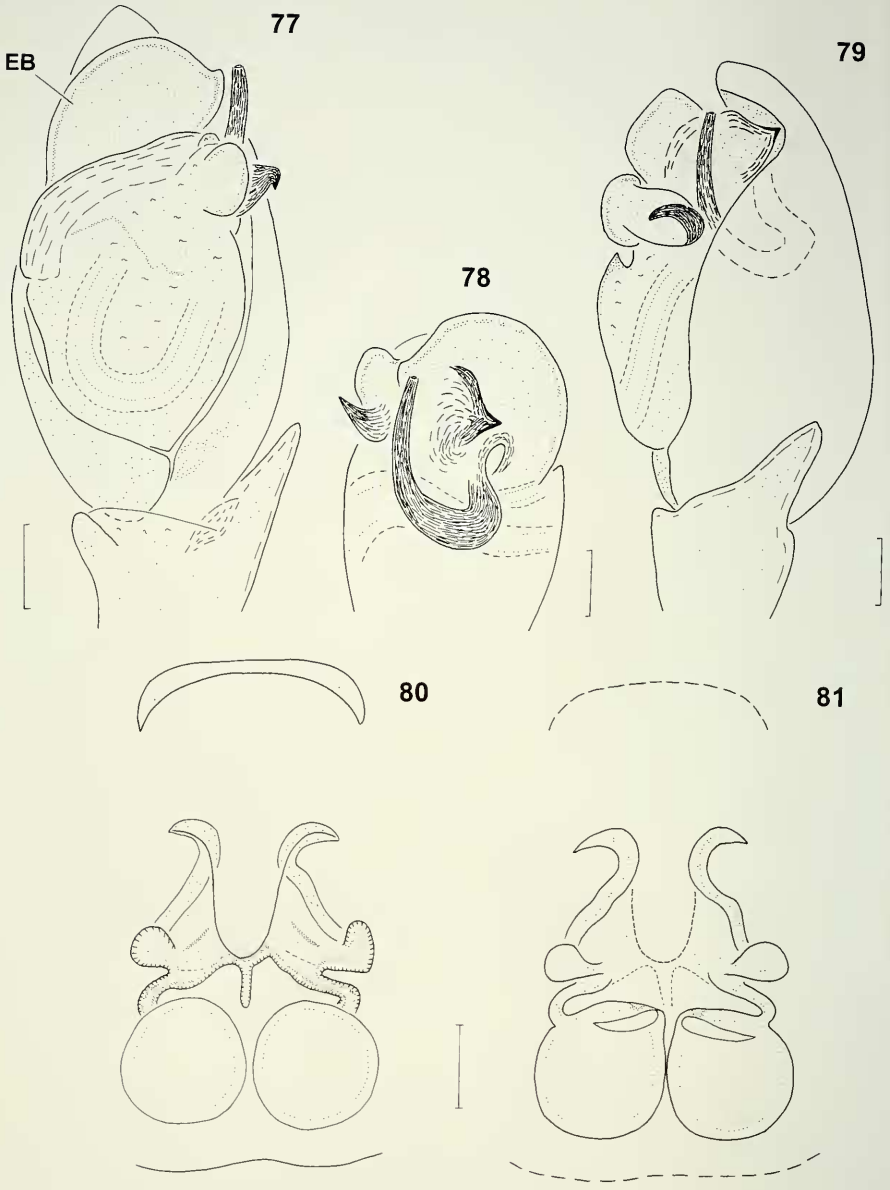


FIGS 72-76

Zelotes scrutatus. Palp of ♂, ventral view (72), dorsal view (73), retrolateral view (74), epigyne (75), vulva (76). Scale lines 0.1mm.

♂ ♀: Small spiders of light brown colour. PME closer to PLE than to each other, smaller than the rest of eyes, round.

Legs: Me III-IV with apical preening combs. All Ta, Me, Ti full of long hairs. All Co, Me, Ta, Pa and Ti III-IV yellow, other articles brown. Spination: Fe: I-IV d 1-3. Pa: I-IV - . Ti: I-II - ; III v 3 r 1; IV v 5-6 r 1. Me: I-II - ; III p 3 r 2; IV v 2 p 1 r 2.



FIGS 77-81

Zelotes minous sp. n. Palp of ♂, ventral view (77), dorsal view (78), retrolateral view (79), epigyne (80), vulva (81). EB: embolar base. Scale lines 0.1mm.

♂ Pedipalp (Figs 77-79): Tibial apophysis short. Tegulum broadly membranous. Embolar base (EB) bulging, with a sclerotized dorsal process. Embolus short, directed along retrolateral side of tegulum, rising from dorsal end of embolar base.

Epigyne (Fig. 80): Anterior margin continuous. Median plate tongue-like, its anterior ends curved.

Vulva (Fig. 81): Introductory orifices probably situated at curved part of median plate, leading to a large pouch, with lateral glandular heads. Introductory ducts short. Spermathecae large, globular.

Comments. This species is closely related to *Z. puritanus* Chamberlin, 1922 (see Grimm 1985, Figs 247c, 248, 270-271). Apart from being much larger, *Z. puritanus* also differs in details of the embolic division of the male palp and in the shape of the median plate of the epigyne.

Ecology. *Z. minous* sp. n. is widespread on the island of Crete, though not very common (Fig. 122). It also occurs on the islands of Gavdos and Dia. It prefers phryganic habitats close to the sea and was never collected in mountainous areas.

Distribution. Crete, Karpathos (Greek endemic?).

Zelotes nilicola (O. P.-Cambridge, 1874) Figs 82-86, 118

Identification: Platnick & Shadab (1983, p.186, Figs 263-266), Levy (1998, p. 142, Figs 104-107).

Material. CRETE: CHANIA: Site 18 (c 1 ♂ 1 ♀; d 3 ♂♂ 2 ♀♀) (all leg. Paragamian); IRAKLEIO: Site 48 (a 5 ♂♂ 1 ♀) (leg. Trichas); LASITHI: Site 64 (d 4 ♂♂ 3 ♀♀) (leg. Papadimitrakis).

Taxonomy. The taxonomical characters of this species fit well the descriptions of Platnick & Shadab (1983) and of Levy (1998). The palpal organ possesses a strange, saw-like, dorsal process (p) originating from the embolar base, as already reported by Levy (1998).

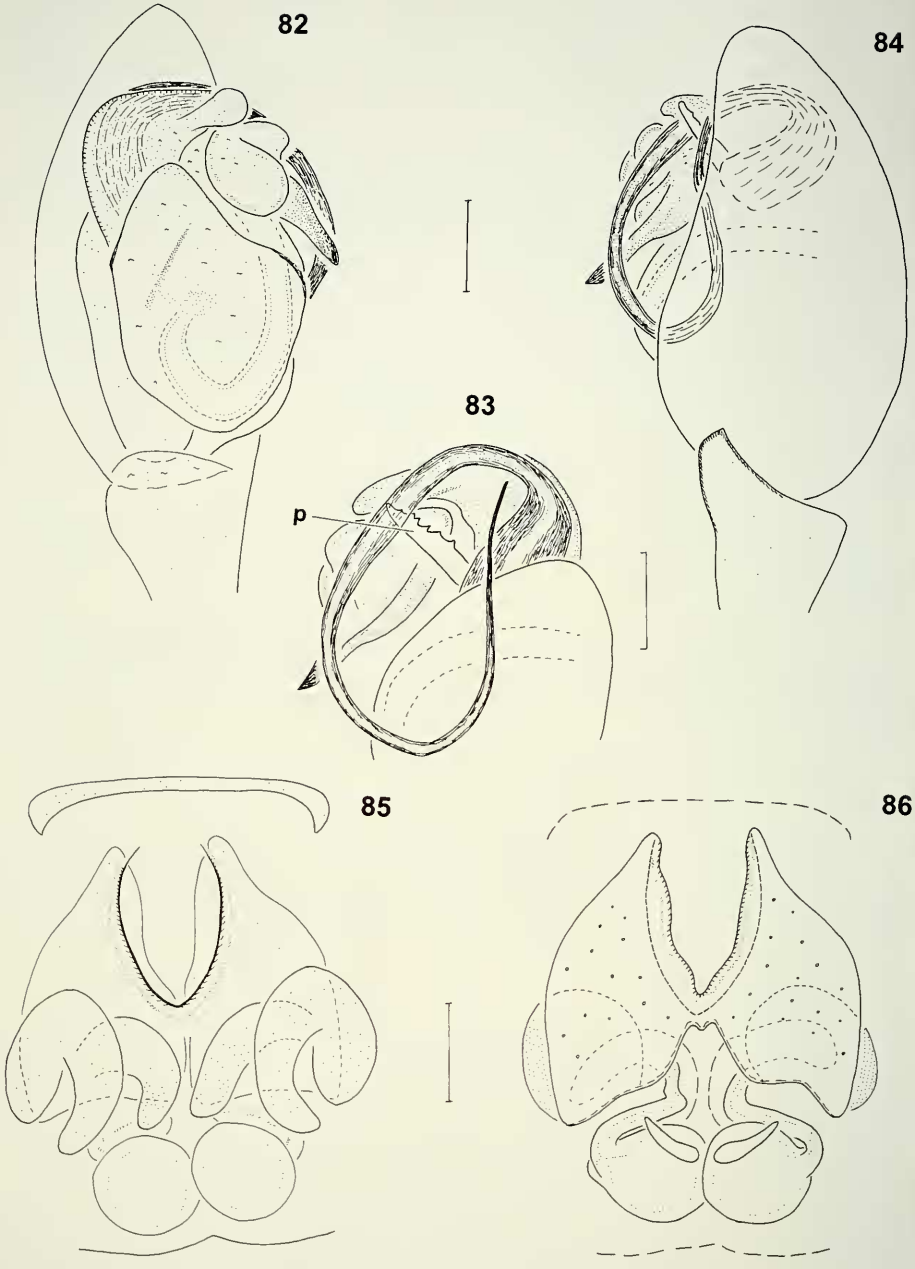
Ecology. This species is rare on Crete (Fig. 118). It has been collected at three sites on Crete and at one on Gavdos, all of them close to the coast and to fresh water, in areas with sandy soil. Adults occur in late summer.

Distribution. Circum-Mediterranean: Egypt, Tunisia, Corsica, Giglio Isl., Cyprus, Israel, Canary Isls., GREECE: Attiki: Athens (Platnick & Shadab, 1983), introduced to the USA (according to Platnick & Shadab, 1983).

Zelotes labilis Simon, 1914 Figs 87-90, 93-96, 98-101, 104, 123

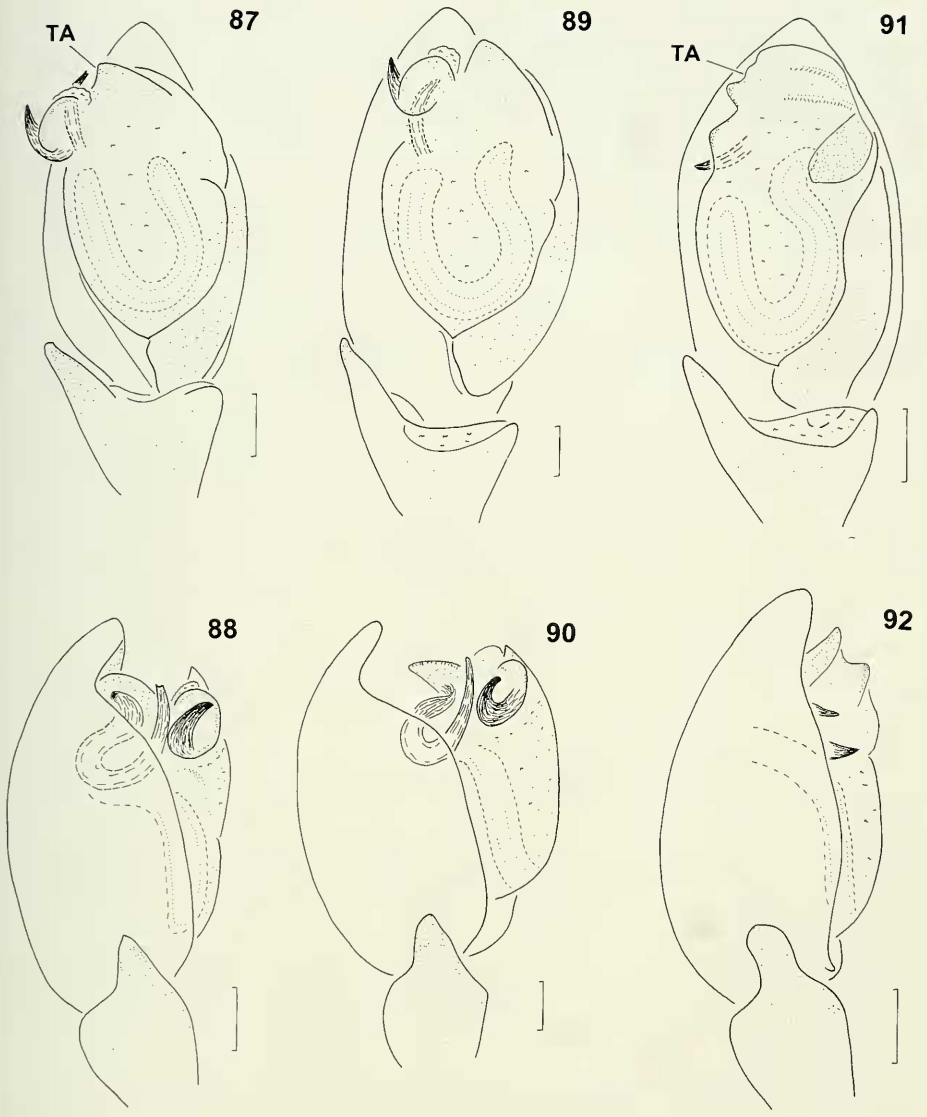
Identification: Hadjissarantos (1940, p. 82, Figs 28-29).

Material. CRETE: CHANIA: Site 3 (a 10 ♂♂ 5 ♀♀; b 2 ♂♂ 2 ♀♀; c 1 ♀); Site 4 (b 1 ♀); Site 6 (d 1 ♂; e 4 ♂♂ 1 ♀; f 1 ♂); Site 7 (e 1 ♂ 1 ♀; f 1 ♀; g 1 ♀); Site 8 (e 1 ♂; f 2 ♂♂ 1 ♀; g 2 ♀♀; k 1 ♀); Site 9 (a 8 ♀♀; c 2 ♂♂ 1 ♀; d 7 ♀♀; g 3 ♀♀); Site 10 (a 1 ♂ 4 ♀♀); (all leg. Lymberakis); Site 14 (c 15 ♂♂ 2 ♀♀; d 5 ♂♂ 5 ♀♀); Site 15 (c 4 ♂♂; d 2 ♂♂ 1 ♀); Site 16 (c 21 ♂♂ 1 ♀; d 15 ♂♂ 11 ♀♀; 1 ♂ [CTh]); Site 17 (c 7 ♂♂; d 2 ♂♂ 3 ♀♀); Site 18 (a 1 ♀; c 5 ♂♂; c 2 ♀♀ [CTh]; d 2 ♂♂ 5 ♀♀); Site 19 (c 5 ♂♂ 1 ♀; d 6 ♂♂ 2 ♀♀); Site 20 (a 1 ♂; b 1 ♂ 1 ♀); Site 21 (d 3 ♀♀); Site 22 (b 4 ♂♂); Site 23 (c 7 ♂♂ 6 ♀♀) (all leg. Paragamian); RETHYMNO: Site 25 (a 7 ♀♀; b 1 ♀) (all leg. Lymberakis); Site 27 (a 27 ♂♂ 6 ♀♀; b 1 ♂ 2 ♀♀) (all leg. Chatzaki); Site 34 (a 2 ♂♂ 3 ♀♀; b 1 ♂ 7 ♀♀; e 1 ♀); Site 37 (a 18 ♂♂ 13 ♀♀; b 1 ♂ 4 ♀♀; e 1 ♂ 1 ♀) (all leg. Chatzaki); Site 35 (a 1 ♀) (leg. Trichas); Site 28 (a 1 ♂ 2 ♀♀; b 10 ♂♂ 9 ♀♀); Site 29 (b 1 ♀); Site 32 (a 3 ♀♀; b 1 ♀); Site 39 (a 2 ♂♂ 4 ♀♀); Site 40 (b 8 ♂♂ 10 ♀♀; c 9 ♀♀); Site 41 (a 18 ♂♂ 11 ♀♀; b 1 ♂ 9 ♀♀) (all leg. Nikolakakis); IRAKLEIO: Site 42 (e 8 ♂♂ 4 ♀♀; f 8 ♂♂ 1 ♀; g 2 ♀♀) (all leg. Chatzaki); Site 43 (a 1 ♂; b 1 ♂ 2 ♀♀); Site 44 (b 5 ♂♂ 1 ♀); Site 45 (a 3 ♂♂ 7 ♀♀; b 1 ♂ 6 ♀♀); Site 46 (a 17 ♂♂ 11 ♀♀; b 7 ♀♀); Site 47 (b 12 ♂♂ 16 ♀♀; e 2 ♂♂ 1 ♀); Site 49 (b 2 ♂♂



FIGS 82-86

Zelotes nilicola. Palp of ♂, ventral view (82), dorsal view (83), retrolateral view (84), epigyne (85), vulva (86). p: dorsal process. Scale lines 0.1mm.



FIGS 87-92

Zelotes labilis, specimens from the lowlands (87-88), specimens from high altitudes (89-90), *Z. daidalus* sp. n. (91-92). Palp of ♂, ventral view (87, 89, 91), retrolateral view (88, 90, 92). TA: terminal apophysis. Scale lines 0.1mm.

5 ♀♀); Site 50 (c 1 ♂ 6 ♀♀; d 1 ♀); Site 51 (a 1 ♂ 1 ♀; b 1 ♀); Site 52 (b 1 ♀); Site 53 (b 1 ♀) (all leg. Nikolakakis); LASITHI: Site 55 (a 8 ♂♂ 2 ♀♀; b 2 ♂♂ 4 ♀♀); Site 56 (a 6 ♂♂ 4 ♀♀; b 1 ♂ 1 ♀); Site 57 (a 7 ♂♂ 4 ♀♀); Site 73 (a 1 ♂ 13 ♀♀; b 1 ♂ 1 ♀) (all leg. Chatzaki); Site 58 (a 2 ♂♂ 4 ♀♀; b 4 ♀♀); Site 62 (a 1 ♂ 3 ♀♀; b 1 ♀); Site 64 (d 1 ♂ 1 ♀); Site 65 (a 1 ♀); Site 68 (a 1 ♀) (all leg. Nikolakakis); Site 63 (b 1 ♂ 1 ♀); Site 71 (b 3 ♂♂ 5 ♀♀ [MHNG]) (all leg. Stathi); Site 59 (a 1 ♂) (leg. Trichas).

ANTIKYTHIRA: Potamos, 700m W: sparse phrygana on sandy soil close to the village, (1 ♂ 3 ♀♀, pitfall traps 27/3/2001 – 5/8/2001, leg. Chatzaki).

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (4 ♀♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

KOS: Kefalos – Ag. Ioannis, 1 km S, phrygana and adjacent pine forest, (6 ♀♀, pitfall traps 26/6/2001 – 9/9/2001, leg. Chatzaki).

PELOPONNISOS: Mainalo Mt., alpine phrygana (1 ♂ 2 ♀♀, pitfall traps 9/7/1997 – 12/10/1997, leg. Anastasiou).

Comparative material examined (vidit M. Chatzaki): *Z. labilis*: Attiki, Ekali (1♂, 10/5/1935, Col. Hadjissarantos, ZMUA); Samos, Koumaradaioi (1♀, 1/8/1937, Col. Hadjissarantos, ZMUA).

Taxonomy. *Z. labilis* was first described by Simon (1914) based on female specimens from the Pyrenees. Later Hadjissarantos (1940) identified one female from Samos by using the key of Simon, and one male from Attiki, which he described for the first time. We are therefore uncertain about the true identity of the species collected by Hadjissarantos and about its relationship to *Z. labilis* (sensu Simon). However, as our specimens fit the description of Hadjissarantos (see shape of tibial apophysis, terminal apophysis and median plate of the epigyne), we follow his opinion. This species shows a high variability in genital characters, as will be discussed later. A more detailed study, covering the whole range of their distribution, may prove that these different forms belong to more than one species.

Measurements ♂(♀), n = 142 (200): TL: 2.75-5.35 (2.9-7.4), PL: 1.3-2.25 (1.3-2.25), PW: 1-1.8 (0.95-2.05), PL/PW: 1.17-1.63 (1.1-1.52).

Pedipalp ♂ (Figs 87-90, 93-96): Tibial apophysis small, conical. Tegulum oval, partly membranous, with sperm duct following its periphery. Terminal apophysis (TA) triangular, situated at the apical end of the tegulum. Position of retinaculum retrolateral, apical. Embolus small, situated dorsally to the terminal apophysis. Embolar base bulging, rounded, forming a median hole with strongly sclerotized rim (H). The shape of this hole changes when seen from different angles (compare Figs 93 and 94) and it also differs among specimens. Here we give the two extreme forms (compare dorsal view Figs 93, 95 and dorsal/prolateral view 94, 96). In specimens from the lowlands (Figs 87-88 and 93-94) the rim is rounded, with a small tip; in specimens from Lefka Ori, at altitudes above 1650m (Figs 89-90 and 95-96), it is more prominent, forming a triangular process (p). In specimens from the other mountain regions of Crete the rim has two pointed tips (Lasithi, Limnakaro plateau) or is provided with some small tips (Psiloreitis Mt.).

Epigyne (Fig. 98): Anterior margin divided, with two well-separated caps. Median plate U-shaped, often V-shaped, and longer than wide. In specimens from high altitudes the median plate is as long as wide (see Fig. 100).

Vulva (Fig. 99): Introductory channels starting at lateral sides of the median plate with a pouch, then leading through transverse ducts to globular spermathecae. Glandular heads of variable size, attached to the pouches. In specimens from high altitudes (Fig. 101) the pouches are larger and the distance between the posterior rim of the median plate and the spermathecae is greater.

Comments. This species presents great variability in size and in morphological characters of the genitalia. Out of 142 male and 200 female specimens examined, only 22 and 9, respectively, are considered as large (TL♂ > 4.5mm and TL♀ > 6mm),

while the majority are of smaller size. This large form, mostly present in the high altitudes of Crete, shows some differences in the genitalia, as mentioned above. Also specimens from Mt. Mainalo in Peloponnisos belong to a special type. As there are intermediate forms between these extremes (see also Fig. 104), we place all these specimens into one species. A further analysis of the genitalia and in a wider geographical range must be conducted, in order to achieve a better understanding of the taxonomic structure of this 'species'.

Ecology. *Z. labilis* is very common on Crete and surrounding islands (Fig. 123), as well as on Peloponnisos. The small lowland form occurs up to 1200m, while the large form was found from 1650m upwards. The two extremes are apparently interconnected by a zone of transition. Adults occur from spring to late autumn, with a peak of activity from late spring to early summer.

Distribution. France, Sicily, Greece.

Zelotes daidalus Chatzaki sp. n. Figs 91-92, 97, 102-103, 123

Etymology: The name is taken from Greek mythology: Daidalos was the architect of the Minoan palace of Knossos; noun in apposition, hence invariable.

Material. Type material: Site 27a (Exantis, leg. Chatzaki) (1 ♂ holotype, 2 ♀♀ paratypes [NHMC]; 1 ♂ 1 ♀ paratypes [MHNG]).

CRETE: CHANIA: Site 2 (a 7 ♂♂; b 3 ♂♂); Site 3 (a 2 ♀♀ [CTh]; b 1 ♂); Site 6 (f 1 ♂) (all leg. Lymberakis); Site 16 (c 1 ♂ [CTh]; d 5 ♂♂) (all leg. Paragamian); RETHYMNO: Site 39 (a 1 ♂); Site 40 (b 1 ♂); Site 41 (a 2 ♂♂) (all leg. Nikolakakis); IRAKLEIO: Site 47 (b 1 ♂) (leg. Nikolakakis); LASITHI: Site 55 (a 3 ♀♀; b 4 ♀♀) (all leg. Chatzaki); Site 63 (b 1 ♂); Site 71 (b 3 ♂♂) (all leg. Stathi).

Taxonomy. This species is close to *Z. labilis*. Both species have a similar habitus (*Z. daidalus* sp. n. is rather smaller), and the general structure of the epigyne is similar as well. However, *Z. daidalus* sp. n. can be easily distinguished by the shape of the tibial apophysis, the terminal apophysis and the transverse embolus. In *Z. daidalus* sp. n., the median plate of the epigyne is wider than in *Z. labilis*, the glandular heads are in a different position and the distance between posterior rim of median plate and spermathecae is greater.

Measurements ♂ (♀), n = 16 (8): TL: 3-3.7 (3.5-6), PL: 1.4-1.6 (1.4-2), PW: 1-1.25 (1.1-1.6), OL: 1-1.25 (1.8-3.5), PL/PW: 1.26-1.39 (1.2-1.4).

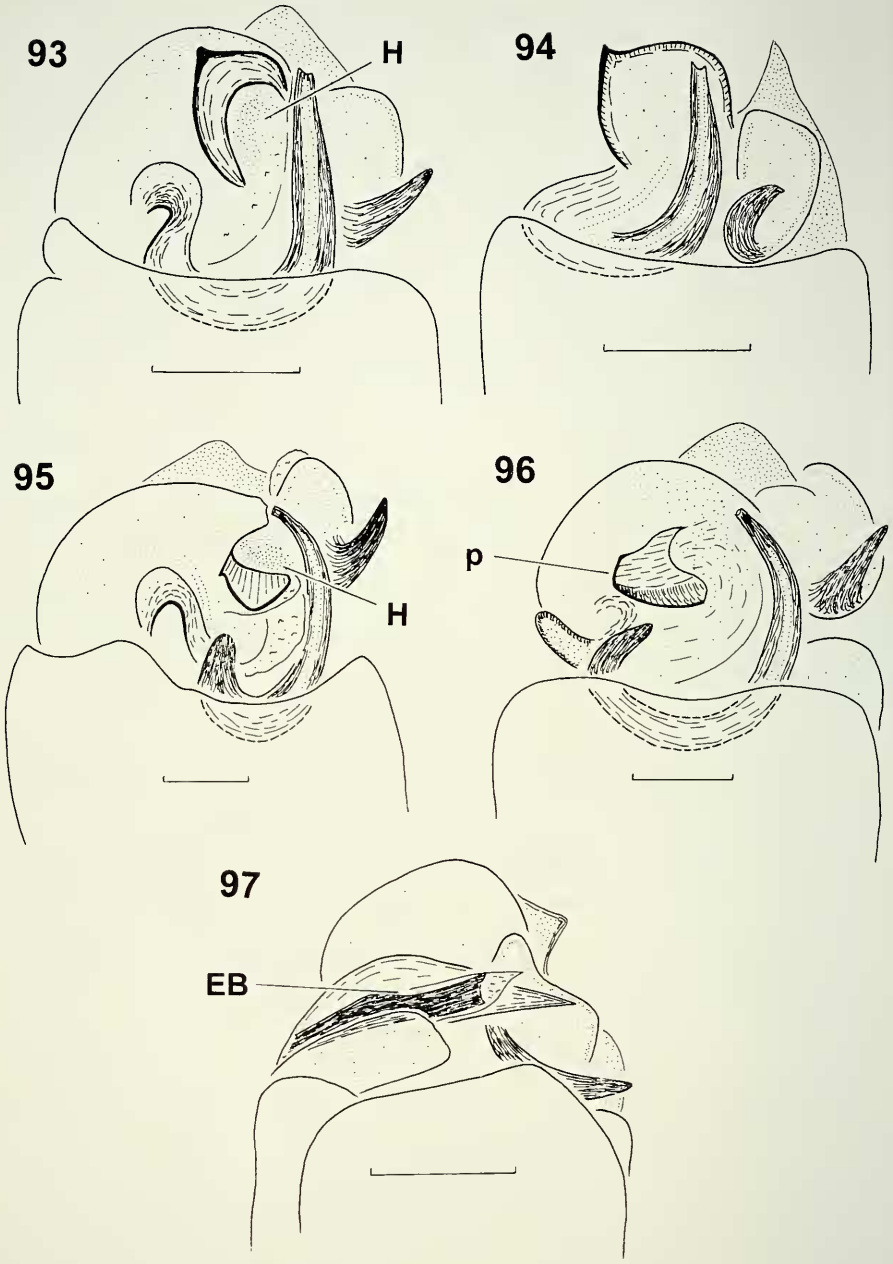
♂ ♀: Habitus as in *Zelotes labilis*. Dark brown spiders of small size. Prosoma equally wide along its whole length. Anterior and posterior rows of eyes straight.

Legs: Me III-IV with apical preening combs. All Co, Me and Ta yellow, other articles brown. All Ta and Me with spiny hairs. Spination: Fe: I-II d 0-2; III-IV d 2-3. Pa: I-IV - . Ti: I-II - ; III-IV spinose ventrally. Me: I-II - ; III-IV spinose ventrally.

♂ Pedipalp (Figs 91-92, 97): Tibial apophysis relatively short, rounded. Terminal apophysis (TA) bulging, rounded, hiding the embolus and the retinaculum, seen only from the dorsal view. Embolus short, tranverse, with distinct embolar base (EB).

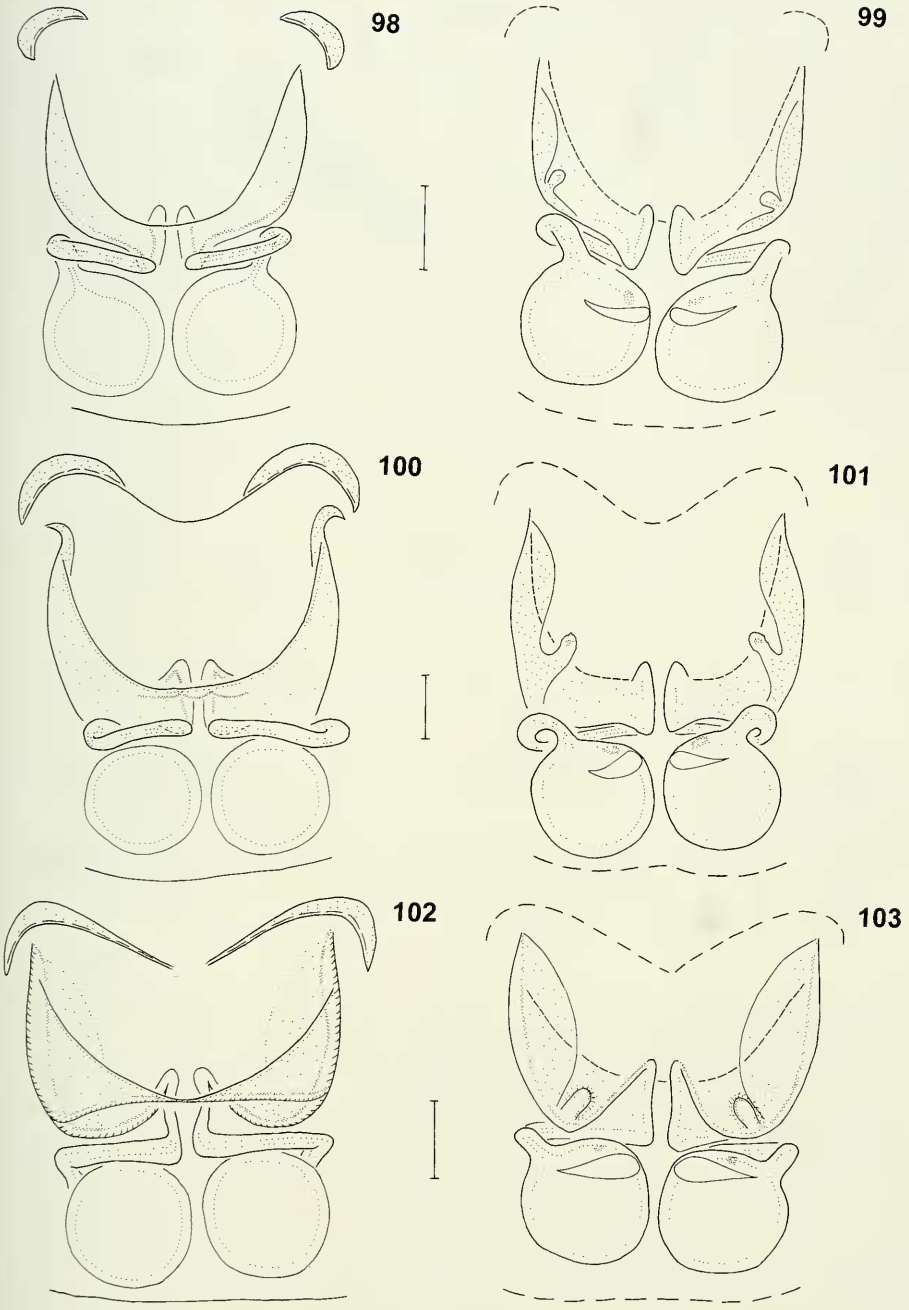
Epigyne (Fig. 102): Anterior margin wide, almost continuous. Median plate wider than long, its posterior margin broadly curved.

Vulva (Fig. 103): Introductory channels starting with pouches, glandular heads attached to posterior angles. Introductory ducts transverse, spermathecae globular, as



FIGS 93-97

Zelotes labilis, specimens from lowlands (93- 94), specimens from high altitudes (95-96), *Z. daidalus* sp. n. (97). Palp of ♂, dorsal view (93-97). H: sclerotized rim, p: triangular process, EB: embolar base. Scale lines 0.1mm.



FIGS 98-103

Zelotes labilis, specimens from lowlands (98-99), specimens from high altitudes (100-101). *Z. daidalus* sp. n. (102-103). Epigyne (98, 100, 102), vulva (99, 101, 103). Scale lines 0.1mm.

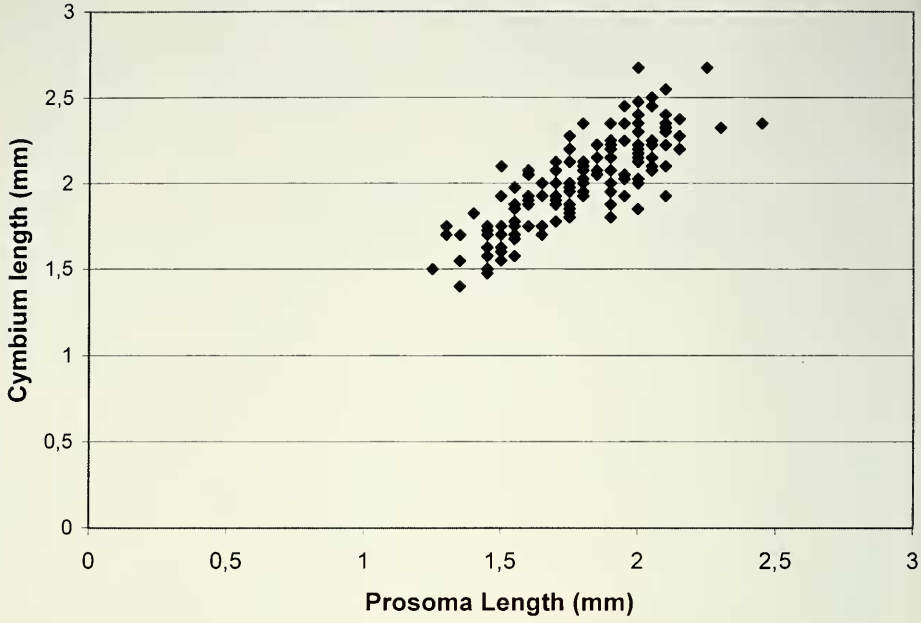


FIG. 104
Scatter diagram of ♂ *Z. labilis* morphometric measurements: cymbium / prosoma length.

in *Z. labilis*. Distance between the posterior rim of the median plate and the spermathecae greater than in *Z. labilis*.

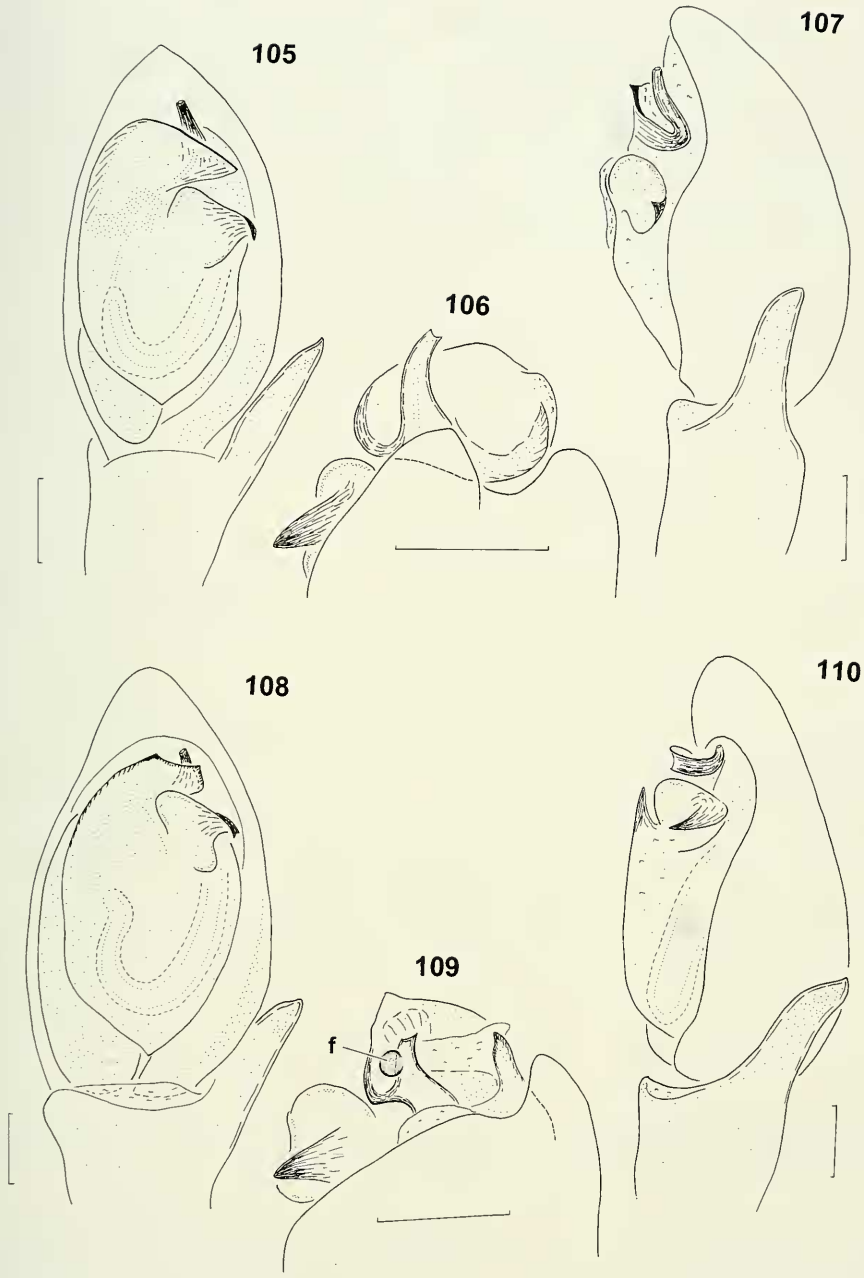
Ecology. *Z. daidalus* sp. n. occurs mainly at the periphery of Crete (Fig. 123), probably indicating an immigration from other regions rather than an endogenous origin. It is not very common either on Crete or on Gavdos.

Distribution. Crete, Gavdos.

Zelotes tenuis (L. Koch, 1866) Figs 105-114, 124

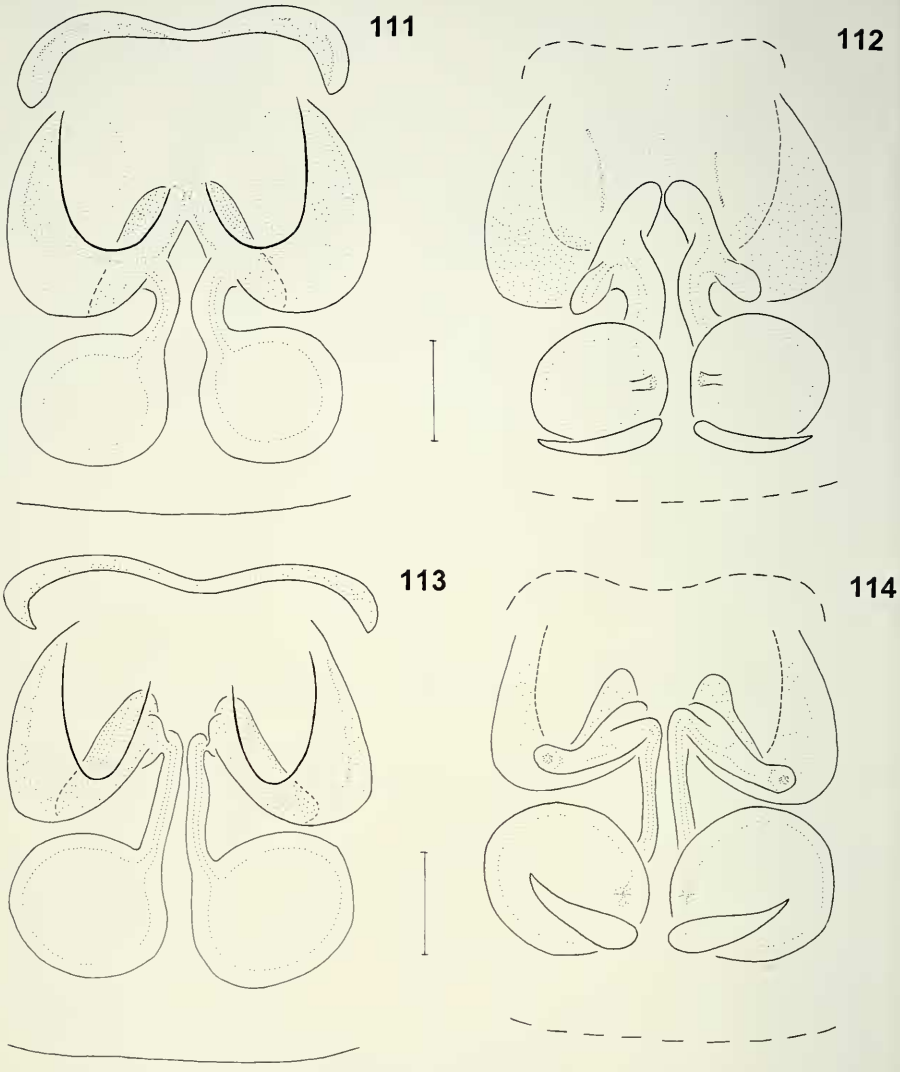
Identification: Levy (1998, p.131, Figs 78-81), Platnick & Shadab (1983, p.185, Figs. 259-262 [sub *Z. pallidus*, see Platnick, 1989:489]).

Material. CRETE: CHANIA: Site 2 (b 2 ♂♂ 1 ♀); Site 3 (a 1 ♂; b 9 ♂♂ 1 ♀; c 3 ♂♂); Site 4 (a 1 ♂; b 5 ♂♂ 11 ♀♀); Site 5 (b 25 ♂♂ 27 ♀♀; c 2 ♂♂ 1 ♀); Site 6 (e 5 ♂♂ 1 ♀; f 22 ♂♂ 4 ♀♀; g 16 ♀♀; h 3 ♀♀); Site 7 (e 1 ♂; f 2 ♀♀) (all leg. Lymberakis); Site 15 (d 2 ♂♂); Site 16 (c 3 ♂♂; d 2 ♀♀); Site 17 (c 3 ♂♂; d 2 ♂♂ 2 ♀♀); Site 18 (a 2 ♀♀; c 1 ♂; d 2 ♂♂); Site 19 (a 1 ♀; c 1 ♂; d 2 ♂♂); Site 20 (b 1 ♂); Site 21 (a 1 ♀; c 1 ♂; d 6 ♀♀); Site 22 (b 3 ♀♀) (all leg. Paragamian); RETHYMNO: Site 25 (a 3 ♂♂); Site 26 (a 6 ♂♂ 1 ♀; b 16 ♂♂ 8 ♀♀; c 1 ♀) (all leg. Lymberakis); Site 27 (a 6 ♂♂ 1 ♀; b 4 ♂♂ 19 ♀♀) (all leg. Chatzaki); Site 28 (b 13 ♂♂ 23 ♀♀); Site 29 (a 3 ♂♂; b 8 ♂♂ 6 ♀♀); Site 39 (a 2 ♂♂); Site 40 (b 35 ♂♂ 1 ♀; c 10 ♂♂ 46 ♀♀; d 3 ♀♀); Site 41 (a 1 ♂; b 5 ♂♂ 6 ♀♀) (all leg. Nikolakakis); IRAKLEIO: Site 42 (f 9 ♂♂; g 6 ♂♂ 7 ♀♀; h 7 ♀♀ (all leg. Chatzaki); Site 43 (b 2 ♂♂); Site 44 (a 2 ♂♂; b 15 ♂♂ 6 ♀♀; b 3 ♂♂ [MHNG]; c 2 ♀♀; c 2 ♀♀ [MHNG]); Site 45 (a 55 ♂♂ 8 ♀♀; b 6 ♂♂ 26 ♀♀); Site 47 (b 14 ♂♂ 7 ♀♀; c 7 ♀♀); Site 50 (e 8 ♀♀); Site 52 (a 1 ♂; b 25 ♂♂ 4 ♀♀; c 2 ♀♀) Site 54 (b 7 ♂♂ 3 ♀♀) (all leg. Nikolakakis); Site 46 (a 34 ♂♂ 20 ♀♀; b 35 ♀♀); Site 49 (a 32 ♂♂ 4 ♀♀; b 20 ♂♂ 36 ♀♀; c 5 ♀♀); Site 50 (c



FIGS 105-110

Zelotes tenuis, rare form (105-107), common form (108-110). Palp of ♂, ventral view (105, 108), dorsal view (106, 109), retrolateral view (107, 110). f: subterminal fringe. Scale lines 0.1mm.



FIGS 111-114

Zelotes tenuis, rare form (111-112), common form (113-114). Epigyne (111, 113), vulva (112, 114). Scale lines 0.1mm.

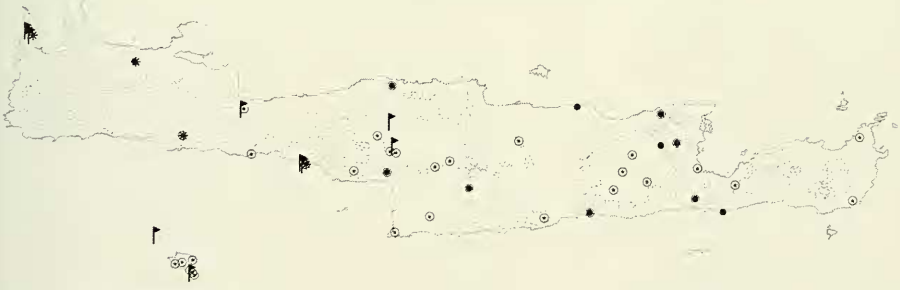
35 ♂♂ 6 ♀♀; c 1 ♂ var.; d 17 ♂♂ 27 ♀♀) (all leg. Papadimitrakis); LASITHI: Site 55 (a 2 ♂♂ 1 ♀; b 1 ♂ 4 ♀♀); Site 73 (a 5 ♂♂ 4 ♀♀; b 1 ♀) (all leg. Chatzaki); Site 58 (a 11 ♂♂ [CTh]; a 3 ♀♀; b 13 ♀♀ [CTh]); Site 62 (a 10 ♂♂ 8 ♀♀; b 24 ♀♀); Site 64 (d 10 ♂♂ 2 ♀♀; d 2 ♂♂ 3 ♀♀ var.; e 3 ♀♀); Site 65 (a 14 ♂♂ 3 ♀♀; b 2 ♀♀); Site 68 (a 7 ♂♂ 6 ♀♀; b 1 ♀) (all leg. Papadimitrakis); Site 60 (a 2 ♂♂); Site 63 (b 6 ♂♂ 2 ♀♀; c 10 ♀♀); Site 71 (b 17 ♂♂ 8 ♀♀; c 6 ♀♀) (all leg. Stathi); Site 61 (a 3 ♂♂ 3 ♀♀; b 4 ♂♂ 1 ♀); Site 66 (a 3 ♂♂ 1 ♀); Site 67 (a 6 ♂♂ 2 ♀♀) Site 69 (a 1 ♂ 3 ♀♀); Site 70 (b 1 ♀); Site 72 (a 3 ♂♂ 1 ♀; b 7 ♂♂ 2 ♀♀) (all leg. Trichas).

● *Camillina metellus*
200m
800m

FIG. 115
Camillina metellus, distribution on Crete.

⚑ *Drassyllus pumiloides* sp.n.
● *Drassylus praeficus*
200m
1200m

FIG. 116
Drassyllus praeficus, *D. pumiloides* sp. n., distribution on Crete.



⚑ *Trachyzelotes adriaticus*
✱ *Trachyzelotes barbatus*
● *Trachyzelotes lyonnetti*
⊙ *Trachyzelotes malkini*
600m

FIG. 117
Trachyzelotes adriaticus, *T. barbatus*, *T. lyonneti*, *T. malkini*, distribution on Crete.

● *Setaphis carmeli*
▲ *Zelotes aerosus*
⚐ *Zelotes solstitialis*
✱ *Zelotes nilicola*
800m

FIG. 118
Setaphis carmeli, *Zelotes aerosus*, *Z. solstitialis*, *Z. nilicola*, distribution on Crete.

● *Zelotes caucasius*
400m
1000m

FIG. 119
Zelotes caucasius, distribution on Crete.

● *Zelotes subterraneus*
1000m
1800m

FIG. 120
Zelotes subterraneus, distribution on Crete.

* *Zelotes* cf. *ilotarum*
• *Zelotes creticus*
200m
800m

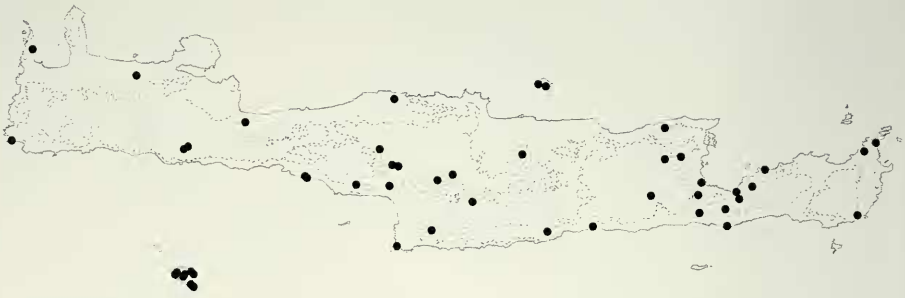
FIG. 121
Zelotes creticus, Z. cf. *ilotarum*, distribution on Crete.

* *Zelotes minous* sp.n.
• *Zelotes scrutatus*
200m
1200m

FIG. 122
Zelotes scrutatus, Z. *minous* sp. n., distribution on Crete.

⊙ *Zelotes daidalus* sp.n.
• *Zelotes labilis*
400m
1000m
2000m

FIG. 123
Zelotes labilis, Z. *daidalus* sp. n., distribution on Crete.



● *Zelotes tenuis*
400m

FIG. 124
Zelotes tenuis, distribution on Crete.

KARPATHOS: Pyles – Volada, 1 km E, phrygana on an earlier burnt field, (14 ♂♂ 6 ♀♀, pitfall traps 12/5/2001 – 23/8/2001, leg. Chatzaki).

KOS: Kefalos – Ag. Ioannis, 1 km S, phrygana and adjacent pine forest, (21 ♂♂ 34 ♀♀, pitfall traps 26/6/2001 – 9/9/2001, leg. Chatzaki).

Taxonomy. Measurements ♂(♀): n = 14 (16): TL: 3.4-7.2 (3.5-9.6), PL: 1.6-3 (1.5-3.4), PW: 1.2-2.5 (1.1-2.4), OL: 1.6-4.1 (1.6-5.7), PL/PW: 1.17-1.52 (1.19-1.47).

♂♀: Medium sized spiders of reddish brown colour. Posterior row of eyes straight or slightly recurved, anterior row straight or slightly procurved. PME round or oval.

Legs: Me III-IV with apical preening combs. Ta I-II with scopula hairs, III-IV with spiny hairs. Spination: Fe: I-II d 3; III-IV d 5-6. Pa: I-II, IV - ; III r 1. Ti: I - ; II v 0-1; III-IV spinose. Me: I v 0-2; II v 3; III-IV spinose.

♂ Pedipalp (Figs 105-110): Tibial apophysis almost straight. Cymbium oval. Embolar base broad, transverse, its end sharply turning to the dorsal side. Embolus short, dorsal, often with a subterminal fringe (f).

Epigyne (Fig. 111, 113): Anterior margin wide, continuous. Median plate divided posteriorly by a median septum, introductory orifices situated at its lateral sides.

Vulva (Fig. 112, 114): Introductory channels starting with pouches, well-separated from each other, then leading as narrow, parallel ducts to the spermathecae. Glandular heads posterior.

Comments. In the material collected from Crete, two forms of this species are present; a rare one (males found at Sites 50 and 68, Figs 105-107 and females found at Sites 2, 4, 5, 6, 7, 26, 27, 52, 54, Figs 111-112), and a very common one (Figs 108-110 and 113-114). In males, the two types differ in the shape of the embolar base (compare Figs 105 with 108 and 107 with 110) and in details in the embolic division (compare Figs 106 with 109). In females, differences are seen in the width of the median septum of the epigyne (compare Figs 111 with 113) and in the introductory channels (compare Figs 112 with 114). As males and females of the two types are mixed at the same localities, we cannot suggest that they belong to different species. Therefore, we place them into one species, accepting that the differences presented in male and female genitalia reflect intraspecific variation.

Ecology. *Z. tenuis* is very common on Crete, Gavdos and Dia, as well as on Karpathos and Kos. It is widespread in the lowlands, but does not occur above 1000m. Two peaks of activity were observed in males, one in late spring and one in early autumn; in females one in mid-summer.

Distribution. Mediterranean: Spain, France, Corsica, Italy, Croatia, Egypt, GREECE: Crete: Akrotiri, Kalathas Pond (Platnick & Shadab, 1983); Karpathos; Kos, introduced to the USA (Platnick & Shadab, 1983).

CONCLUDING REMARKS

In this paper we revise the gnaphosid zelotine group of Crete and adjacent areas. In total, 20 species are reported, belonging to five genera (*Camillina*, *Drassyllus*, *Trachyzelotes*, *Setaphis* and *Zelotes*). Three species are new to science (*Drassyllus pumiloides* sp. n., *Zelotes daidalus* sp. n., and *Z. minous* sp. n.). *Camillina metellus* is a new combination for *Zelotes metellus* Roewer, 1928 and the first record of *Camillina* for Greece. *Trachyzelotes stubbsi* Platnick & Murphy, 1984 and *Zelotes bucharensis* Charitonov, 1946 are proposed as new synonyms of *T. adriaticus* (Caporiacco, 1953) and *Z. scrutatus* (O. P. Cambridge, 1872), respectively. Two species are recorded for the first time from Europe (*Z. aerosus* and *Z. solstitialis*), four are recorded for the first time from Greece (*Drassyllus praeficus*, *Trachyzelotes adriaticus*, *Setaphis carmeli* and *Z. subterraneus*) and two are recorded for the first time from Crete (*Z. labilis* and *Z. nilicola*).

Most of the species examined have a Mediterranean distribution (*T. barbatus*, *T. lyonneti*, *S. carmeli*, *Z. labilis*, *Z. subterraneus*, *Z. nilicola*) or an East Mediterranean distribution (*Z. solstitialis*), whilst few have a wider distribution (*D. praeficus*, *T. malkini*, *Z. aerosus*, *Z. scrutatus*). Apart from the newly described species, another three are still considered endemic to Greece (*C. metellus*) or endemic to Crete (*Z. creticus* and *Z.* cf. *ilotarum*). However, until a more thorough study of the East Mediterranean region is carried out, knowledge of the true distributions of the zelotine species cannot be considered to be precise. For example, a more detailed analysis and further material are needed to clarify the taxonomic status of the dubious species *Z. ilotarum* and *Z. labilis* on the Balkan Peninsula, the Greek islands and in Asia Minor.

Many zelotines are common on Crete, show non-specific ecological preferences and are abundant in most types of lowland habitats. *Z. caucasius*, *Z. tenuis*, *Z. labilis*, *Z. scrutatus* and *T. malkini* are among the commonest and most abundant spiders on the island. However, some species are more localized, i.e. are present either in the western part (*T. barbatus*, *T. adriaticus*, *Z. creticus*) or in the eastern part of Crete (*D. praeficus*, *T. lyonneti*, *Z.* cf. *ilotarum*). This may be due to either competitive interaction between congeners (as mentioned in the case of the *Trachyzelotes* group) or to different limits of tolerance to dryness, which probably makes the less tolerant species avoid the driest parts in the east of the island. The greater abundance of *D. praeficus* and *Z. creticus* recorded in the higher altitudes of Crete, indicate some preference of these species for mountainous regions, at least in the Mediterranean.

There are 11 and 6 zelotines recorded on Gavdos and Dia, respectively. These species belong to the commonest Cretan species of the group. Exceptions are *C.*

metellus and the new species *Z. minous* sp. n. and *Z. daidalus* sp. n. (only on Gavdos), which occur on these islands, but are not very common on Crete.

Most of the species reported here present similar phenologies, being active from spring to autumn. Males have two peaks of activity, one in late spring and one in early autumn and the females have one peak in late spring or in the mid-summer. The only exception is *Z. subterraneus*, which is more active during the autumn and the winter months.

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